THE IRON AGE

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THE IRON AGE

New York, Thursday, September 10, 1908.

A Power House Coal Handling Equipment.

Installed for the Philadelphia Rapid Transit Company by the Webster Mfg. Company.

The coal handling equipment described herein is interesting, particularly for its size and the difficulties overcome in handling coal at the Delaware avenue power station of the Philadelphia Rapid Transit Company, Philadelphia, Pa. The conveyors and elevators were installed to carry 100 tons per hour, but since put into service have been operated on a basis of about 200 tons per hour, and have not yet reached the limit of their capacity. Two practically

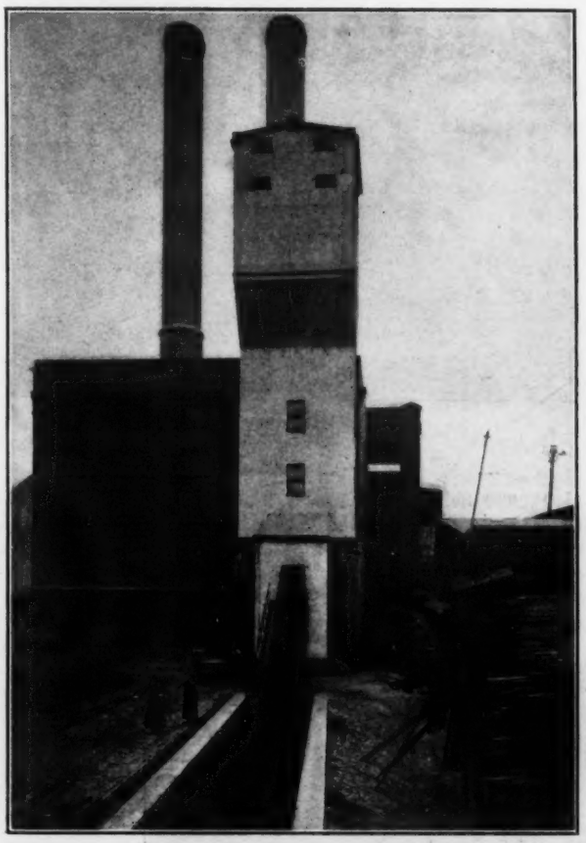


Fig. 1.—View of the Power House, Showing Elevator A at the Right in the Background and Elevator B in the Foreground.

independent equipments were installed, one for handling anthracite and the other for bituminous coal; although both can be used for handling either class of fuel. They elevate and carry the fuel to two concrete bins, 42 x 100 x 16 ft. each, which are located in the boiler house of the plant, just under the roof, and 60 ft. above the street level. Each of these bins has a capacity of 1000 tons of coal, which is fed by means of chutes, to the boilers on the ground floor of the building, and is fired both by hand and by mechanical stokers.

What is known as elevator A was the first constructed and is located close to the power house. This elevator is shown in the background of Fig. 1, and was installed primarily for handling anthracite coal, although it is equally adaptable for bituminous coal. In this case the coal is discharged from cars into concrete hoppers located on either side of the elevator, which discharge directly to the elevator boot. This elevator lifts the coal in 24 x 18 x 12 in. buckets, made of 3-16-in. steel, to a hight of 100 ft., delivering it through a steel chute, shown in Fig. 2, to a conveyor, known as conveyor No. 2, which is 116 ft. between centers and extends directly over one of the storage bins. Discharge gates placed in the trough at intervals of 10 ft. permit of the necessary distribution of coal along the length of the bin. Elevator A is driven through gears by a 40 hp. Westinghouse motor, shown in Fig. 3, running at a speed of 600 rev. per min., which is reduced through the gears to a speed of 8 rev. per min. of the main gear and sprocket. All the gears are cast steel; the main gear is 60 in. diameter, while the sprocket is 52½ in. diameter. The speed at which the elevator is driven is 100 ft. per minute.

Elevator B, the second member of this system, is located on a pier, extending into the Delaware River, from the opposite side of the street on which the power house is located, and was designed particularly for handling bituminous coal, but is so arranged that it can be equally well used for handling anthracite. The coal is delivered on this pier either by railroad cars, a siding

Fig. 2.—Where the Chute from Elevator A Discharges Into the Conveyor Over the Bins.

extending directly over the hoppers, or by barges. In the latter case the fuel is transferred from the barges by a locomotive crane to small transfer cars, which are then pushed over the hoppers and dumped. The hoppers are of concrete and discharge the coal to a short conveyor located beneath them.

The difficulty in maintaining the flow of coal, particularly when bituminous coal is being handled, is overcome by the use of the Webster improved pusher, which operates on a short length of track beneath the hoppers. This device consists of three cast iron pushers, operating in a metal trough, each pusher supported on rollers and driven by an eccentric. The three eccentrics are on one shaft, and may be individually engaged or disengaged through jaw clutches. The pushers are driven by belt from an independent 10-hp. motor. Under each of the pushers is a small screw conveyor for carrying dust from the pushers, which would otherwise have a tendency to clog. These small conveyors deliver the dust into the

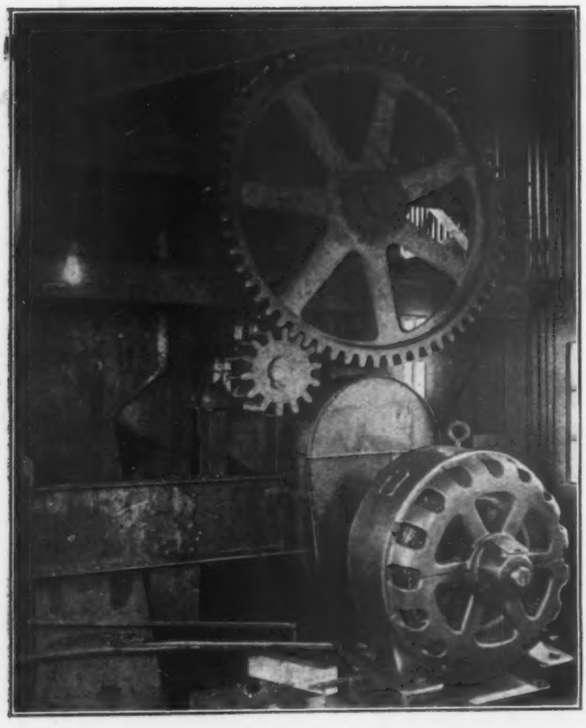


Fig. 3.—The Motor and Driving Gears of Elevator A.

conveyor, under the hoppers, which in turn delivers the coal to a conveyor running at right angles. The latter is 215 ft. between centers, and carries the coal up an inclined trough and delivers it at a hight of 30 ft. to a crusher at the base of the conveyor. A 40-hp. direct connected motor supplies the power for this conveyor.

The crusher is of the ordinary two-roll type, with 30 x 30 in. cast steel rolls. A 20-hp. direct connected motor supplies the power for the crusher. The coal in passing through the rolls is crushed to a maximum size of 1 in. To avoid passing the fine coal through the crusher a screen is placed in the trough of the conveyor at the discharge end, the fine material passing through the screen is carried by a chute direct to the elevator boot. A gate is also placed in the trough near the screen, so that when it is desired to elevate anthracite coal, it can be delivered through the same chute to the boot of the elevator without passing through the crusher.

The buckets used on elevator B differ from those on elevator A in that they are of the V type. They are made of 3-16-in. steel, with reinforced edges and are 28 x 20 x 9 in. in size. They are hung at the sides, and are located 36 in. apart from center to center. A 40-hp. motor, operating the same as that described in connection with elevator A, supplies the motive power for elevator B. This elevator raises the coal to a hight of 100 ft., and its speed is 100 ft. per minute. Through a chute it delivers the coal into a conveyor, which is 169 ft. long between centers, and is carried over Delaware avenue on a bridge, as shown in Fig. 4. This conveyor extends

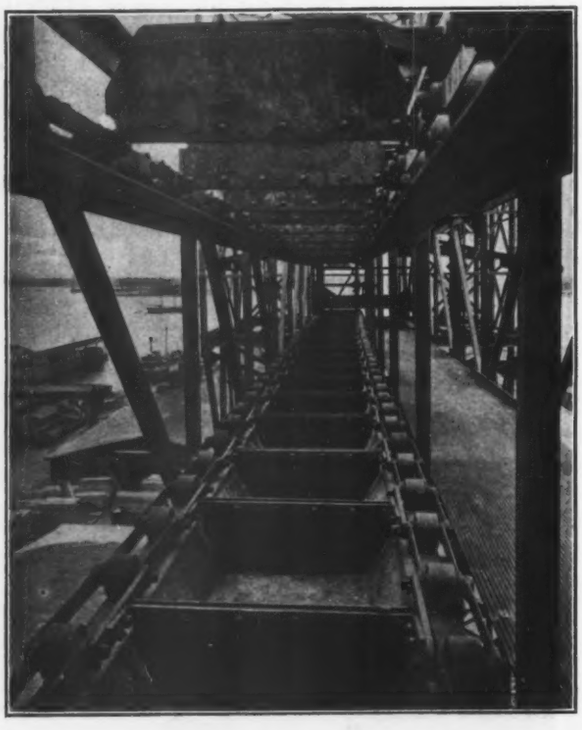


Fig. 4.—The Conveyor on the Bridge Over Delaware Avenue.

along one side of the power house and is so arranged that through chutes, the coal can be delivered to conveyors running over either of the two storage bins. This conveyor is driven by a 25-hp. electric motor, with silent chain drive, and the same manner of gearing is used as in the other conveyors and elevators.

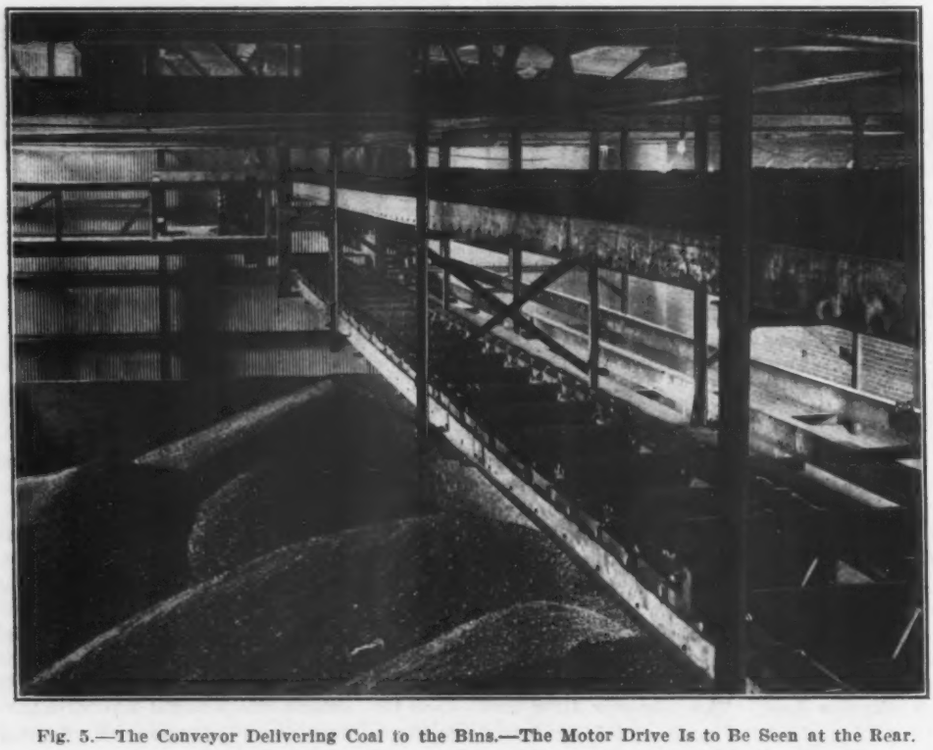


Fig. 5.—The Conveyor Delivering Coal to the Bins.—The Motor Drive Is to Be Seen at the Rear.

The distributing conveyor over the second storage bin, shown in Fig. 5, is 89 ft. between centers, and is driven by a 20-hp. direct connected motor. It has distributing gates in the trough, located at intervals of 10 ft.

All the conveyors are fitted with 30 x 12 in. flights made of ¼-in. steel. Each flight is connected to the chain by a ⅝ x 2 in. flat steel bar, running entirely across the flight. The troughs are all of 3-16-in. steel, V-shaped, with flat bottoms, and are held in position by screws into 4 x 8 in. carrying timbers bolted to channel bars. On top of the channels are laid ⅝ x 3½ in. steel bars, which serve as the runway for the chain rollers. The chains for all the elevators and conveyors are of the same size, and consist of ⅜ x 2½ x 18 in. drop forged links, the ends of which are ¾ in. thick at the pin holes. The pins are 1½ in. diameter and 7½ in. long. The rollers are 5 x 3 in., are self-oiling, and have chilled faces. Each conveyor is fitted with two strands of chain.

The various conveyors in the power house are carried in steel frames, supported from the roof trusses, while for the conveyor from elevator B, a bridge extending across Delaware avenue was erected. While five lines of conveyors are now installed, provision has been made in the design to extend the system at a future date, using four more conveyors.

The Webster Mfg. Company, Chicago, Ill., designed and furnished all the equipment in connection with this plant, as well as the supporting steelwork for its installation. The Philadelphia Rapid Transit Company furnished the skeleton frames of elevators A and B, and the supporting bridge for the conveyor across Delaware avenue.

Customs Decisions.

An Iron Ore Case.

After the taking of much testimony, the Board of United States General Appraisers has handed down a decision favorable to the claims of George S. Collins & Co. and Francklyn & Ferguson, regarding the rate of duty to accrue on importations of iron ore. The customs authorities assessed the merchandise for duty at the rate of 30 per cent. under the provision in the tariff for crude hematite ore. The importers, on the other hand, alleged that the rate should be 40 cents a ton under the provision for "iron ore." It is stated in the board's decision that the Federal courts have found in favor of the importers' contention, while the Treasury Department has acquiesced in the finding. Under these circumstances, the claim for the imposition of the lower duty is upheld, and the collector directed to reliquidate the entries in harmony with the decision of the board.

Imported Samples.

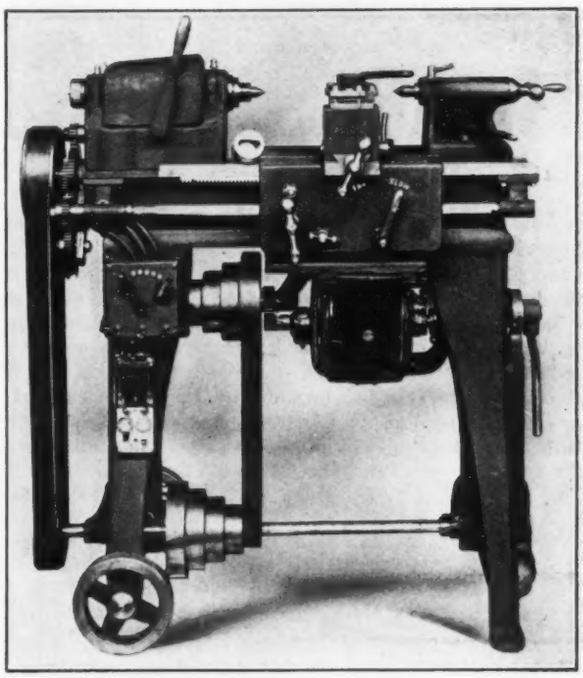
It has been decided by the Board of United States General Appraisers that collectors of customs and other officers of the Treasury Department are not authorized to collect a fee for the delivery of imported samples. Under the customs regulations there is no duty on importations of this kind, but for many years the customs officials have been in the habit of exacting a delivery fee. A test case has been brought by the Snow's United States Sample Express Company, Ltd., with a view to breaking up the practice. The board finds that there is no warrant for the imposition of the tax, and a decision was handed down last week in favor of the importers.

Women in French Machine Shops.—Special Agent Godfrey L. Carden, reporting to the Bureau of Manufactures, Department of Commerce and Labor, includes the following statement in his remarks regarding a visit to the automobile factory of De Dion-Boutin & Cie., Paris, France, where he observed many makes of American machine tools in use: "Brown & Sharpe have supplied about 11 millers, and I find that Dion & Cie. are employing women operatives with these machines. One woman was caring for four millers, and was receiving, I was informed, about 70 centimes per hour. I also found women operatives running Gleason gear cutters, one of whom I was told had worked at these machines for four years steadily, with the exception of four months' absence as the result of injury. The women operatives are receiving 70 centimes per hour. Seven women were found at work running millers and gear cutters. It is the first time I have found women intrusted with the high-grade machines."

A Rockford Fitting Lathe.

The lathe illustrated was designed and built by the Rockford Drilling Machine Company, Rockford, Ill., for use on the assembling floors of its own shop.

The speed is regulated by the cones underneath the bed. Four-step cones offer sufficient variety of speed for the ordinary fitting operations. The lever in front of the head stock throws in a positive clutch by moving to the right hand, giving the proper cutting speeds. Throwing the same lever to the left hand engages a friction clutch



A Portable Fitting Lathe Built by the Rockford Drilling Machine Company, Rockford, Ill.

which revolves the spindle much more rapidly, giving the proper filing speeds.

The chuck shown on the bed acts as a driver for arbors, and in every case the arbors being standard for the work used in the shop, flat at one end, and are held in the lathe between centers, the oblong opening in the chuck acting as a driver, avoiding the necessity of the use of dogs, making it possible for operator to quickly remove arbor from the machine.

The lathe is equipped with a four-tool turret tool post, and also has a very convenient locking handle for the cross slide. The cross feed screw is graduated in thousandths, and the lever shown to the right of the apron engages the clutch for either a slow or a fast speed.

The tail stock end of the machine is equipped with an eccentric which enables operator to raise the legs on the tail stock end from the floor,causing the weight of that end of the machine to be sustained on a swivel ball bearing caster, making it very easy to move the lathe around the assembling floor. One man can move the machine easily with one hand.

This machine was designed for use on assembling floors, giving the operator an electrically driven machine which when required for use would be always at hand and ready, and could be readily moved around among the batch of machines on the setting-up floor to the point where operator would decide to use it.

"Burning" a Propeller Wheel Blade.*

BY THOS. D. WEST, SHARPSVILLE, PA.

The ability to unite broken bodies of cast iron so as to make the whole as good as when new or stronger will not only often save the cost of a new casting, but in many cases may save much machining. To these advantages should be added that of being able to replace the piece quickly, thus saving the heavy losses resulting from the partial or complete stopping of a plant. Of late years

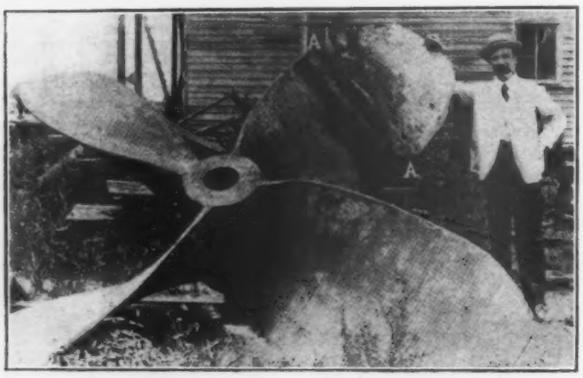


Fig. 1.—Propeller Wheel with Broken Blade Restored.

several new methods have been established whereby broken castings are united by brazing or by high heat generated by electricity or gases, but beyond what may be done with thermit these methods do not accomplish what "burning" in the foundry can do with difficult jobs.

Few operations in a foundry require for a successful outcome greater ingenuity combined with right conditions. At intervals accounts of burning jobs appear, that are eagerly studied by the trade, and the following details of the burning of a broken propeller wheel blade will no doubt be studied with interest. Few operations in the foundry require for their successful carrying out greater ingenuity and the constant maintenance of right conditions.

Fig. 1 shows the propeller wheel after being burnt and chipped. The line of union of the new to the old, seen at A A, is 42 in. long. The job was done at the Mobile Pulley & Machine Works, Mobile, Ala., and the foundry foreman, George Boys, designed the rigging and supervised the work.

The first step was to make a light loam plate, *c*, Figs. 3 and 5, about 5 in. wide, and a few inches longer than the width of the blade, as shown. This plate was made with a curve to agree nearly with that of the under side of the blade at the section to be burnt. The plate was daubed up with loam for about ½ in. above the top of its surface, and then pressed up against the oiled surface of a perfect or unbroken blade, at a point to agree with the broken section. When removed it was finished, blacked and placed in an oven to be thoroughly dried and await its replacing as will be described later.

A hole was then dug in the shop floor under the sweep of a crane and the wheel placed in it so as to have a good blade with the tips corresponding with the sections to be burned, to be nearly level, as shown at *b b*, Fig. 2. This good section was to serve as a pattern. The wheel is placed so as to bring the section to be mended about 18 in. above the general level of the floor. When placed in the hole the four blades were blocked up and staked so that the broken blade section could be turned to accurately replace the good one. This done, damp tempered molding sand was rammed up under a good blade and a joint formed at the level *b b*, Figs. 2 and 3, after which a cope was rammed up and lifted off to permit hoisting up and turning the wheel so that the broken blade might lie in the mold formed by the good blade, as at *r*, Fig. 3. An iron plate not shown was placed under the hub to form a solid bearing to help support the wheel.

Flat cores ½ in. in thickness were then placed against the face of the broken fracture, which had been chipped fairly even before setting it in position. The ½-in. cores in place and the mold finished, the cope was closed and the mold poured to give the outer end section *s*, Fig. 3, of the broken blade that had been lost. The next day, after casting this end piece, the top body was all cleaned off and the ½ in. thickness dividing cores removed. A narrow channel under this section, about 8 in. wide, as at the lines *d d*, Fig. 3, was also dug out. A wood fire was then started underneath and on top of the section to be united. When both parts were thus heated to a good red heat, the wood and ashes were all withdrawn. The loamed plate *c* being at hand was placed tightly up under the two sections of the blade and the channel *d d* then rammed up around the blocking to hold the plate in place. This is shown in Fig. 5.

Cores at *e e*, Figs. 3 and 5, were placed so as to be back from the ½-in. opening, *t*, Figs. 3 and 4, about 1½ in.

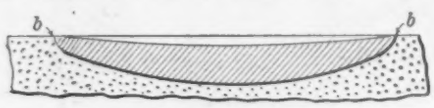


Fig. 2

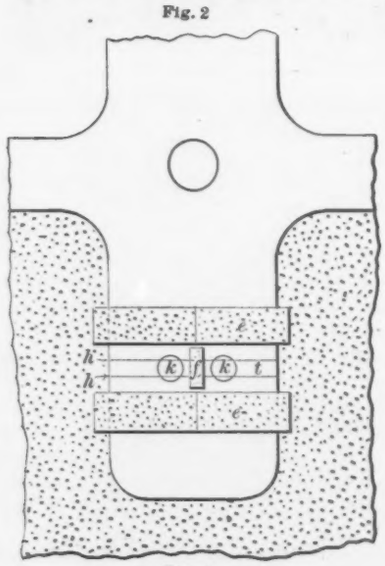


Fig. 4

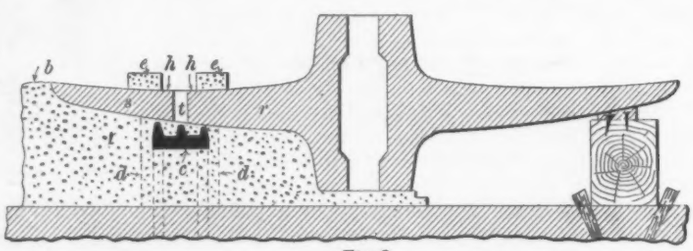


Fig. 3

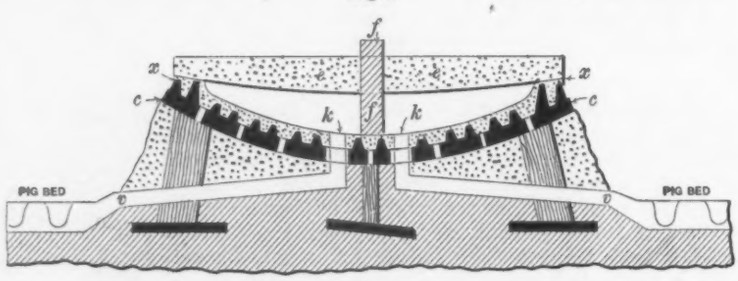


Fig. 5

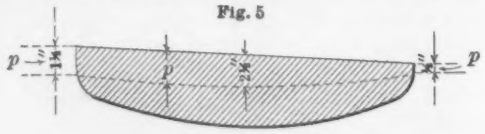


Fig. 6

Sections Illustrating the Method of Preparing the Mold and Introducing Hot Metal.

* A paper read at the meeting of the Philadelphia Foundrymen's Association, September 2, 1908.

on each side. Another core was then placed to form a division as at *f*, Figs. 4 and 5, and all these cores were weighted down so that they could not be moved by the washing or lifting force of the metal.

All this work was done with the utmost dispatch, and when completed about 1200 lb. of good hot metal was poured at such a hight as to form a good cutting stream along each edge, *h h*, Figs. 3 and 4. The metal as it was poured in was allowed to flow out through a 1½-in. hole in the bottom, as shown at *k*, Figs. 4 and 5, into a pig bed placed at a convenient distance from the wheel, as in Fig. 5. After this 1200 lb. of iron had been allowed to flow through the holes *k*, it was "botted" or closed up at the ends *v*, Fig. 5, and about 500 lb. of the metal from the ladle was allowed to drop with a cutting force along the upper edges of *h h*, but instead of allowing this to flow away through the bottom holes *k* it was permitted to flow over the top edge *x*, Fig. 5, of the body being burned.

This total of 1700 lb. of hot metal cut the ½-in. opening to make it about 2 in. wide. To know of the cutting action and to be able to control it a bent rod or scraper was used to work in the opening between the two bodies to be mended.

The first section on the right hand of the dividing core *f*, Figs. 4 and 5, having been burned and completed as just described, a fresh ladle of hot metal was brought up and left hand side treated in the same manner.

Mr. Boys has not stated how he removed the dividing core *f* before proceeding with the left hand burning. This could be readily removed at the proper time by having it well rodded and a hook in it. It is to be understood that in the second operation of burning the metal was allowed to cut into the division formed by the core *f*, as well as along the edge *h h*, and before starting to burn the right hand side, the left was covered with a plate to prevent metal splashing into its mold space.

It might be well to state that the reason for using the dried loam prickered plate *c*, Figs. 3 and 5, is to prevent the dropping stream of metal from scabbing or cutting up the bottom of the mold, as would very quickly occur in the case of green sand. Instead of using a cast iron prickered plate, as shown at *c*, a piece of bent boiler plate, 5 in. wide and a little longer than the width of the blade was that actually used by Mr. Boys. Its concave side was clay washed and plastered with a good thickness of soft loam, after which the work was proceeded with the same as described for the prickered plate.

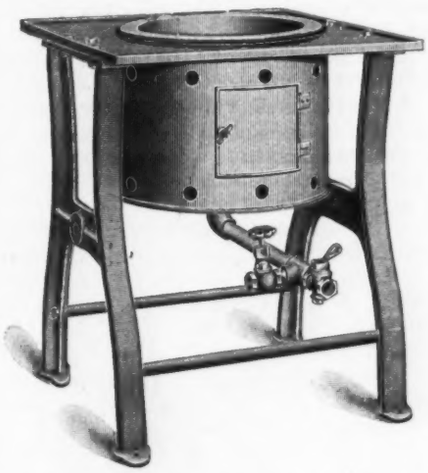
The reason for putting in the dividing core *f*, Figs. 4 and 5, and only burning one-half at a time was the possibility of not making a successful union the whole width of the blade were this attempted. By taking only half the width at one time the cutting stream did not have so far to travel, thereby reducing the chance for one section or some points to cool off beyond the semimolten condition that was necessary in order to insure a perfect weld.

In a later explanation of the processes employed, Mr. Boys states that after the metal had set in each section, he covered it with a little sand and forming a bed, poured about 200 lb. of metal right over the burned portions for about 18 in. wide, and extending well over the ends of the blade. This helped to make the parts adjacent to the burned portions very hot and allowed them to cool off about equal to the new metal, which would naturally pull away from the cold body. After thus covering the top with a hot body of liquid metal, a hole was dug out underneath the burned part to ascertain if this were still red hot, and it was found as was desired. Had it not been red hot a channel would have been made clear in under the blade and a body of metal poured in the channel to come up close to the under side of the blade, thereby keeping the latter red hot in harmony with what was to be expected in a high temperature at the top. The hot scrap metal and the wheel were not disturbed until the morning following the burning operation. After the wheel was removed from its bed to be chipped and cleaned, it had a surface projection somewhat like that seen at *p*, Fig. 6. This had to be all "flogged" and chipped off to make the wheel have a finished face as is seen on the line A A, Fig. 1.

Mr. Boys says: "There was not the slightest sign of a crack, although we used a sledge hammer and a blacksmith's set to cut it off. This is the second one I have mended. The first is now running on one of Lowen & Rowfe's steamers between Manchester and Dublin."

A Melting Furnace for Soft Metals.

The United States Gas Furnace Company, Providence, R. I., has brought out a new melting furnace, shown in the accompanying illustration, for melting lead, tin, zinc, babbitt, aluminum, type metal, &c. The burner is so designed that gas flame strikes the entire surface of the pot, giving great efficiency. The furnace has no lining to be renewed, and nothing need be done in the way of replacement except an occasional new pot. The furnace is manufactured in four sizes: No. 1 has a pot 6½ by 8 in., will melt 100 lb., and burns 25 cu. ft. of gas per hour; No. 2 has a 7 by 10 in. pot, will melt 150 lb., and consumes 30 cu. ft. of gas per hour; No. 3 has a pot 8 by 12 in., melts 250 lb. of metal, and uses 40 cu. ft. of gas per hour; No. 4 has a pot 16 by 12 in., melts 500 lb., and consumes 70 cu. ft. of gas per hour. Smaller and larger sizes are manufactured to order.



A New Metal Melting Furnace Made by the United States Gas Furnace Company, Providence, R. I.

Aluminum as a Feature in a Notching Press.

The Standard Machinery Company, Providence, R. I., has brought out a new type of armature notching press, in the design of which aluminum is made an important factor of construction. The machine is known as the back geared style B press. Its connections and plunger are of aluminum, that they may be as light as possible for a given strength. The effect is increased speed of slide and decreased momentum, making it possible to operate at 600 strokes a minute, a speed which permits of the manufacture of notched disks at a rapid rate, 10 a minute being an average production.

A Horton clutch is used, mounted on the back shaft and actuated by a lever through a toggle joint, the action of which is very quick upon a clutch that takes hold and releases practically instantaneously. The machine is equipped with automatic dial feed. The stroke is 1 in. The fly wheel is 20 in. in diameter, with 3½ in. face. The press referred to is geared three to one. Another type of the machine is geared four to 1, giving a speed of 800 strokes a minute to the slide. The weight is 950 lb., hight over all 56 in., and floor space required 25 x 28 in.

The composition of an acid resisting cement for tanks, floors, &c., is given by the *Brass World:* Silicate of soda, 6 parts (water glass); glycerine, 1 part; red lead, 3½ parts; fine cinders, 10 parts. The silicate of soda and glycerine are mixed and then the red lead and cinders added to make a mass resembling putty. This is used for the cement. It soon sets or hardens, and when heated to the temperature of boiling water, unites with brick or Portland cement to form a strong joint.

The Collection of Data for Tariff Revision.

WASHINGTON, D. C., September 8, 1908.—It is rapidly becoming apparent that domestic manufacturers who intend to resist the movement to reduce existing rates of duty in connection with the coming revision of the Dingley tariff act, must be prepared to devote considerable time in the very near future to gathering reliable data concerning conditions in the competing industries in the principal countries of the world. This information will be found to be absolutely necessary to meet the facts and figures that will soon be in the possession of the Ways and Means and Finance committees, and which doubtless will be quoted to all parties appearing before the committees in support of the retention of existing rates of duty.

The Foreign Cost of Production.

Never before in the history of the country have the Congressional committees adopted such comprehensive plans for securing reliable data before undertaking the revision of a tariff act. Conditions in competing industries abroad are being studied, not only by the experts of the Bureau of Manufactures of the Department of Commerce and Labor, but by confidential agents, whose connection with the work is unknown to any one outside the membership of the Congressional committees. Special attention is being given to cost of production in its manifold details, but no item of importance from an industrial standpoint is being overlooked. Side by side with these figures will be tabulated the cost of living in the leading industrial centers of the principal manufacturing countries of the world.

Notwithstanding the care taken by the Congressional committees and the Department officials supervising the work of their agents abroad, it goes without saying that the information gathered will occasionally be found to be unreliable, and manufacturers who do not secure statistics of their own will find themselves at a serious disadvantage when called upon to explain why reductions of more or less importance in the measure of protection accorded them by existing tariff law should not be made. Inasmuch as the Ways and Means Committee is now planning to begin hearings soon after the November election, it is apparent that manufacturers should lose no time in equipping themselves to make a creditable showing before the Congressional tariff experts.

Treasury Recommendations Opposed.

The suggestion recently made by the Secretary of the Treasury to Senator Burrows' subcommittee of the Senate Finance Committee that the customs administrative act of 1890 be so amended as to permit importers to deduct from, as well as add to, their invoice values to make foreign market value on date of shipment has already aroused the opposition of certain high tariff interests, whose representatives are now in Washington collecting data with a view to opposing the department's recommendations. It is probable that representations against the change will be filed at an early date with Senator Burrows' subcommittee, which is now in New York City. It will be asserted in this connection that the change proposed would not only materially reduce the revenue from the customs, but would be a constant incentive to undervaluation. It will also be urged that if foreign exporters are permitted to quote market prices on date of shipment, when such prices are less than the actual amounts paid for the goods in question, there will be a constant tendency to delay shipments in the hope of taking advantage of a falling market.

As heretofore stated in this correspondence, Treasury officials originally were opposed to this change, but have modified their views after observing the hardships that have resulted in many cases where the market has declined materially after the purchase of goods which the importers have been obliged to invoice at actual cost, thereby sustaining a loss in the excessive duty paid, as well as in the shrinkage in the value of the goods. In view of past experiences, the Treasury officials now take the ground that if an importer is required to add to his invoice to make market value if the market rises after the purchase is made and before shipment, he should not be bound by the purchase price if the market declines.

Importations by Mail.

The recommendation of the Treasury Department that all the customs laws and regulations be extended to importations made by mail is warmly indorsed in communications from domestic manufacturers received here the past week. The necessity for this change has been greatly emphasized by the negotiation of many parcel post treaties between the United States and foreign countries in recent years. Packages weighing up to 11 lb. may now be transmitted through the mails, and articles of great value can thus be imported on a commercial scale without the risk of a penalty for undervaluation or the seizure of the goods. Department officials desire especially that the same customs declaration shall be required in the case of a mailed package as if the goods were sent through the regular channels, and that the declaration and formal entry be made under oath. This change in the law is urged particularly in the interest of reputable importers, who are obliged to compete with rivals who use the mails to evade the scrutiny of custom house experts.

Hearty commendation is also accorded to the recommendation of the Secretary of the Treasury for the abolition of the fee system throughout the customs service. This reform has been repeatedly urged upon Congress as absolutely necessary to put the service on a self-respecting basis. A large number of customs officials now receive their compensation in the form of fees, and the temptation to make exactions, especially from those having little knowledge of customs procedure, is ever present. The Secretary of the Treasury particularly desires that the practice of customs officials based on section 2648, revised statutes, of charging fees for various blanks and for their preparation and execution be done away with, and that such blanks be either supplied by the Department free of cost or printed by private parties in accordance with official models. The experience of the Government in abolishing the system of consular fees and placing consular officials on a salaried basis has proved exceedingly salutary, and a similar innovation is proposed as to customs officials.

In explanation of the recommendation laid before Senator Burrows' sub-committee by the Secretary of the Treasury that customs house brokers be licensed, it is said at the Department that the plan is the same as that put forward in the Fifty-ninth Congress and made the basis of a bill which was favorably regarded by both Ways and Means and Finance committees, but not finally acted upon. The plan is urged both for the protection of the Department and of reputable brokers. The duties performed by brokers are similar to those usually performed by attorneys-at-law, but at present they are not subject to any requirements or supervision. It is proposed that licenses shall be granted only by the Treasury Department, and revocable at any time for cause by the Secretary. The licensing of brokers would in no way limit the right of importers to transact business in the customs house pertaining to their own importations.

Return of the Reynolds Customs Commission.

Much information of value in connection with the revision of the Dingley act and the customs administrative act of 1890 will be brought by the Reynolds Customs Commission, now on its way home after spending a month in negotiation with the French authorities with a view to removing certain obstacles to the free commercial intercourse of France and the United States. The return of the commission imparts an added interest to statistics just made public here showing the total commerce of the United States with Germany in the seven months ended July 31, 1908, as compared with the corresponding period for the years 1904-1907. These figures have been compiled in answer to the charge made by the critics of the existing reciprocity arrangement with Germany that it has greatly stimulated imports of German merchandise as the result of permitting invoice values to be based on so-called export prices. The concessions made to Germany in this agreement, which became effective July 1,

1907, have since been extended to France, and it is expected that Chairman Reynolds, of the commission, will soon submit a report in which will be embraced the results of his investigation of the operation of the export price system of fixing invoice values of shipments of French merchandise.

The statistics just compiled by the Department of Commerce and Labor completely discredit the charge that under the operation of the export price concession, the United States has been made a dumping ground for surplus German products. The imports from Germany in the seven months ending July 31 for the past five years have been as follows: 1904, $60,216,000; 1905, $66,723,000; 1906, $79,257,000; 1907, $92,897,000; 1908, $71,906,000. It thus appears that the imports for the seven months of 1908 were smaller than for any like period since 1905, and were $21,000,000 less than in 1907. According to this statement, the exports for the same periods increased from $93,776,000 in 1904 to $138,819,000 in 1907, but in 1908 declined to $136,649,000. The relatively small decline is attributed to the business depression in the United States and, as compared with other movements due to the same cause, has been comparatively insignificant. It is expected that an effort will be made at the coming session of Congress to secure the abrogation of the present reciprocity agreement with Germany, which would carry with it the withdrawal of the export price concession from all foreign countries. The effort is not likely to prove successful, however, and there is every reason to believe that the existing convention will remain in force at least until July 1, 1909, and probably until superseded by a more comprehensive reciprocity treaty to be based upon the provisions of the new tariff law which Congress is expected to pass at an extra session of Congress early next spring. W. L. C.

The Standard Gauge Mfg. Company's New Plant.

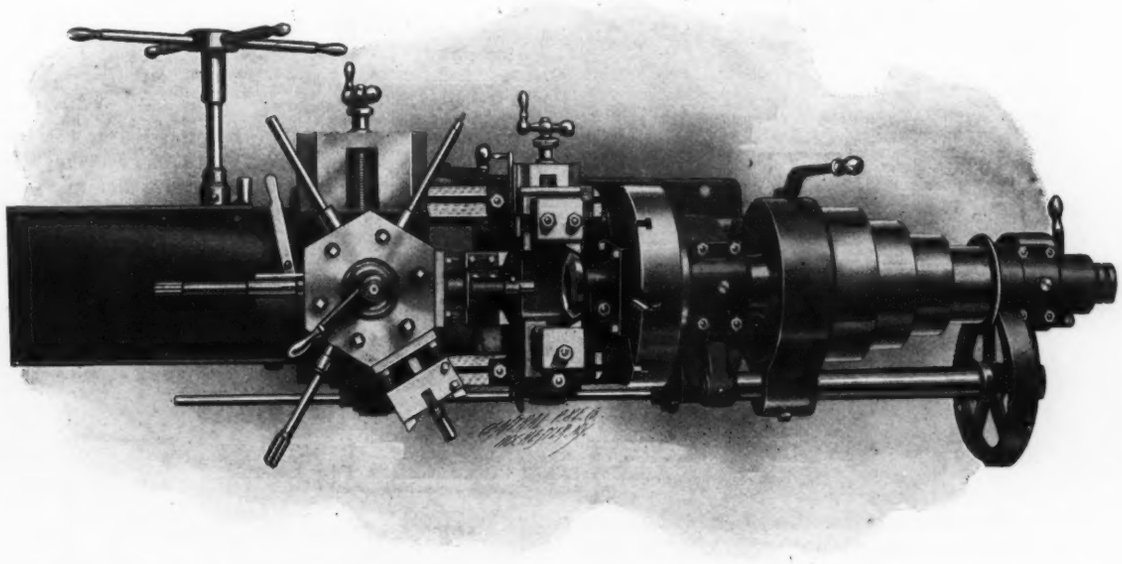
The Schaeffer & Budenberg Mfg. Company, as recently noted in these columns, has sold its plant at Foxboro, Mass., for the purpose of concentrating its operations in Brooklyn, N. Y. The plant was sold to the Industrial Instrument Company, which was lately organized with Bennett B. Bristol, formerly of the Bristol Company, Waterbury, Conn., manufacturer of recording instruments, at its head. The Standard Gauge Mfg. Company will operate the plant for the manufacture of gauges, recording instruments, &c., and the property will be deeded to this company by the Industrial Instrument Company, as the same interests control both concerns. Watson E. Goodyear, Naugatuck, Conn., will be president of the Standard Gauge Mfg. Company; Bennett B. Bristol, treasurer, and Arthur F. Mundy, Syracuse, N. Y., secretary. The plant is modern and well equipped, having two main buildings of brick, 60 x 210 ft. each, and a foundry, 60 x 150 ft., which was added a few years ago at a cost of $20,000. No extensive orders for equipment will be placed at once, but different machine tools will be ordered as required.

A Davis Turret Boring and Forming Lathe.

The illustration shows the top view of a 24-in. turret boring and forming lathe built by the W. P. Davis Machine Company, Rochester, N. Y. It also shows the tools used for boring, turning, facing, and forming a bevel gear. The tools used for this purpose are shown on the cross slide and on the turret. These tools completely turn and form the outside, both angles of the face and front of the gear, as well as boring and reaming the hole.

The entire machine work from the rough casting for a bevel gear of the usual size used on a 20-in. drill, can be finished complete in from 15 to 18 minutes each. This completes the blank ready for the gear cutter.

It has become necessary within the past few years, to bring out special tools for doing the various parts of machines quickly, in order to meet competition. This company furnishes various sizes of machines suitable for rapid and accurate work on cast iron parts of various sizes. Lathes for this purpose are furnished of 18, 24, and 26-in. swing.



Top View of a 24-In. Turret Boring and Forming Lathe Built by the W. P. Davis Machine Company, Rochester, N. Y.

Manitoba Rolling Mills.—The successful operation of the Manitoba Rolling Mills at Winnipeg, Man., is referred to by the *Canadian Manufacturer*, this being the first rolling mill property in Canada west of Toronto and Hamilton. The raw material is chiefly scrap from the Canadian Pacific and Canadian Northern, the mill being located near the new shops of the former. Formerly this scrap was shipped to Montreal, Hamilton and Toronto at heavy freight cost. There are one 9-in. and one 16-in. train and two heating furnaces. The plant is daily turning out about 25 tons of finished material, sizes ranging from ⅜ to 1½ in. in rounds and squares, and ⅛ to 1 in. thickness by ¾ to 5 in. wide in flats, and has been running to its limit with day and night shifts. The president of the company is L. A. McElroy, of Erie, Pa., who is also president of the United States Horse Shoe Company of Erie. Other Erie residents are associated with him in the Winnipeg mill.

The price of gas in the city of Birmingham, England, under the recommendations of the Gas Committee of the City Council, is to be fixed at about 53¾ cents per 1000 cu. ft., cash, for consumers using less than 50,000 cu. ft. per quarter, and at about 36½ cents for those using it for power purposes.

The New Boland Blower and Sandblast.

Improved forms of a positive pressure blower and a self-feeding sandblast are two new products of H. J. Astle & Co. of Providence, R. I., and are the inventions of Frank P. Boland of the firm. The blower, illustrated in Fig. 1, is the No. 5, having a 12-in. bore and 6½-in.

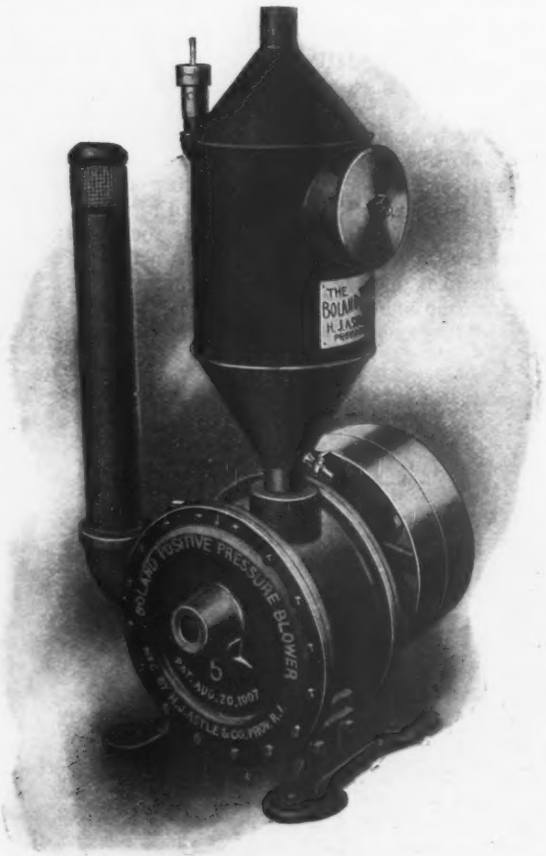


Fig. 1.—The New Boland Low Pressure Blower.

breadth of blades, and is designed for the many classes of work which do not require higher pressures. It delivers at 10 lb. pressure, 725 cu. in. of air per revolution when running at 200 rev. per min. The single machines

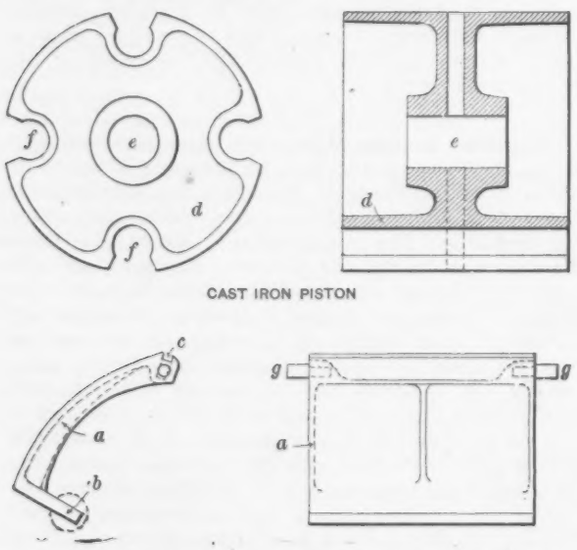


Fig. 2.—Unassembled Details of the Boland Low Pressure Blower.

have four blades; the double machines, in which type the larger sizes are built, have eight.

The details shown in Fig. 2 give an idea of the construction of the machine. The piston, which may be better termed a hub, contains four hinge pockets for the blades. The shaft is eccentric in the cylinder, this

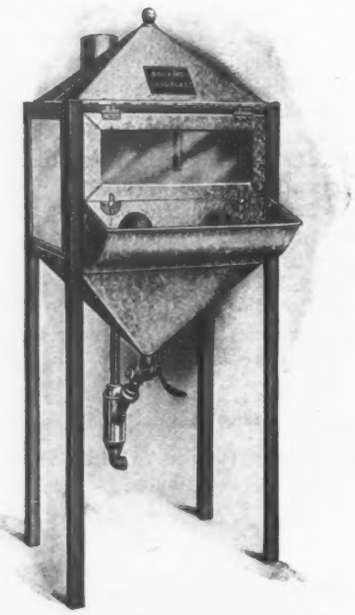


Fig. 3.—The Improved Boland Sandblast.

arrangement constituting an essential feature of the design in securing compression. The blades being hinged and provided with guides working in a slot in the inner side of each head, swing to conform with the eccentricity. The blades form what may be termed four pockets within the cylinder. A pocket takes air from the intake until its forward blade reaches the point of greatest width between the hub and cylinder wall. Cut off from the intake, the air begins to compress as the pocket ap-

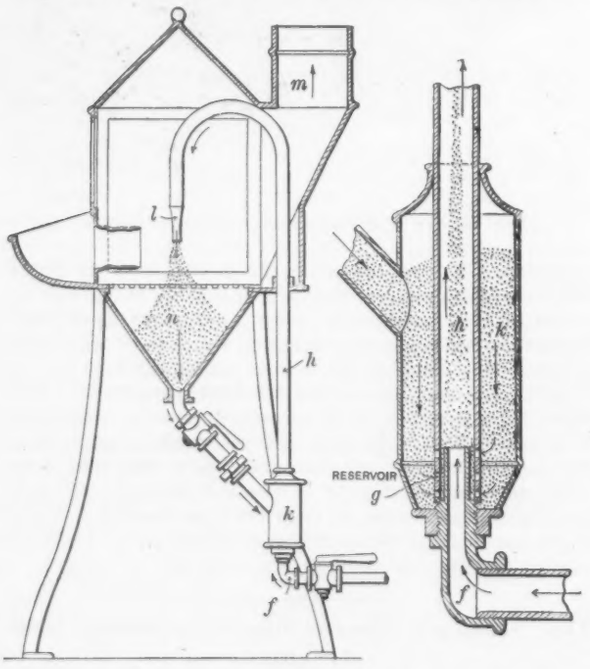


Fig. 4.—Details of the Boland Sandblast.

proaches the narrower space, until when the discharge port is reached, the desired pressure has been attained. The operation is repeated, one blade after the other. The blades have the same curvature as the cylinder, and at the upper position, at the narrow section of the travel, the blade and cylinder are concentric. In the outer edge of each blade is a slot into which fits a bronze safety strip, which provides compensation for wear.

Fig. 2 shows the general idea of the system. The blade *a* has its hinge at *b*, with the slot for the safety strip at *c*. The hinge pockets in the piston *d* on shaft *e*, are shown at *f*, and the pins which hold the guide at *g*. In the head of the machine is a bronze bushing fitted with oil rings, making it self-lubricating. The plunger of the

blower is recessed, permitting the placing of a portion of the hub proper within the chamber, a feature which serves to make the machine more compact than is usual in the type. The air tank which acts as an oil separator is located directly over the blower, and has a self-feeding tube which lubricates the blower at all times, and at the same time prevents oil from passing into the air. One oiling permits of running without renewing oil for a considerable period.

The self-feeding sandblast is shown in Figs. 3 and 4, the engravings giving details of the machine as a whole, and a section through the sand reservoir from which sand is fed automatically to the blast. The air from the blower enters at *f*, this intake pipe being perforated at *g* to the sand reservoir *k*. As the air passes to the pipe *h* its suction draws the sand into the blast, which delivers it to the work at the nozzle *l*. The used sand drops i to the hopper *n*, and returns by gravity to the reservoir, to be used over again. Such particles as are in suspension in the air pass away through the discharge *m*. This new model of the Boland sandblast is very much simpler in construction than previous ones of the same make.

Business Reviving in Canada.

TORONTO, September 5, 1908.—Trade revival is in progress on this side of the border, but the movement is by no means brisk. In hardware circles an appreciably better demand for builders' articles is reported, and the sale of stoves and furnaces is improving. Statements to this effect agree with the account generally given of business in real estate, which is comparatively active and which at no time fell away as much as dealers in properties anticipated. Lumbermen's experience is not quite of the same tenor, the demand for their products being still very dull and prices accordingly depressed. But the market on which the Ontario lumbermen depend is only partially made by the requirements for home consumption, a considerable percentage of their output being exported. Consequently the conditions reflected by the quiet in their trade are in part those of other countries. Of the indications that trade is mending, one of the most reliable is the gain in customs receipts. These may be more significant in that sense than the rising value of the imports themselves, for it is very possible for imports to turn from a state of progressive decline to one of upward movement without any real expansion of demand. The depression may be continuing in the face of increasing imports, these flowing in to take the place of a shrunken home output. But when customs receipts increase they may be taken as a broadening of demand, an extending out into the class of articles known as luxuries, which are the main support of Canada's customs revenue. In August the customs receipts totaled $4,376,046. It is true this sum is $1,250,000 short of that paid in August, 1907, but it is $500,000 in excess of the receipts for July. Further, the Customs Department notes that the improvement became decided and progressive in the last 10 days of the month, favoring the expectation that it would go on accelerating throughout the present month. This means that the influence of the Canadian harvest is beginning to tell upon the import trade of the country.

Influence of the Crops.

That the new wealth yielded to the country by the present harvest will surpass that returned by any former Canadian crop, whether measured in bushels or dollars, is now beyound question, for the grain is practically all housed. That a larger amount of the money proceeds will be required to pay debts than was ever due before on like account in Canada is probably true, though competent and dispassionate students of the situation say that the indebtedness has been magnified. After liquidation has been provided for, a large part of the crop money will still be at the farmers' disposal as buying power. That much of it will be used as buying power and not hoarded may reasonably be inferred from the fact that buying on the part of the farmers in the last crop year was enforcedly suspended, because their scant crop and their pressing creditors put it out of their power to spend as freely as they did in former years. Last year's wants have been carried over, and to them have been added those developed in the last twelvemonth. There will be rather free buying, wherever the goods come from. Canadian merchants and manufacturers, however, continue to be stinted by the banks notwithstanding that the reserves of the latter go on swelling. These financial institutions are collecting their energies for the grain movement, which will certainly call for a lot of money. But unless the cash thus supplied by the banks and distributed among farmers by grain buyers is to be mostly swallowed up in debt payment, merchandise will be purchased with a part of the money, and the banks are not enabling Canadian manufacturers to get all the merchandise ready for the market. Not improbably, therefore, the increase in the import trade will continue.

The portion of the crop money available as buying power, however small or great that portion may be, is by no means all the Canadian people will have to spend. There is a great volume of borrowed money to be put to use in the next twelvemonth and for some time further. This is being raised on the public credit—on Dominion inscribed stock, on provincial bonds and on municipal debentures. It is estimated that upward of $100,000,000 of Canadian municipal credit issues will have been floated in the British market before the close of the present year. The Canadian Pacific Railway Company has decided to increase its capital by an issue of $50,000,000 of new common stock, which, however, is not to be called for at once. The Canadian Government's large borrowings will be put to immediate use. Contracts for the construction of the stretch of the National Transcontinental Railway running from a point in Quebec and far into Ontario are now being awarded by the commission. The Dominion, provincial, municipal and railroad loans and capital issues will be expended upon construction and will conduce to activity in the iron and steel trade.

Good Times in the Maritime Provinces.

Interviews given this week by the Lieutenant-Governor of Nova Scotia, by Premier Murray, by the general manager of the Dominion Steel Company and by the president of the Nova Scotia Steel & Coal Company are optimistic regarding the trade of that province and of the maritime provinces as a whole. The manager of the Royal Bank at Sydney says that the wages fund of the chief Cape Breton industries aggregates $1,000,000 a month at the present time. The main need of the maritime provinces, he considers, is capital for the development of such secondary industries as rolling mills, nail works, car works, &c. He expects that this capital will be forthcoming when the trouble between the Steel Company and the Coal Company is settled. The Dominion Steel Company's steel output in August amounted to 26,500 tons. Of this 5000 tons was made into wire rods. Not a pound of the month's production, it is stated, remains in stock. This business exceeds all past records. Bookings in July, according to General Manager Jones, were 50 per cent. in excess of the output.

D. D. Lewis, superintendent of the Algoma Steel Company, Sault Ste. Marie, announces that the company's blast furnaces will be blown in again September 15, and that the steel works, including the rail mill, will start up on October 1. Orders have been obtained that will suffice to keep the plant running. Government orders standing on the company's books for some time will now be attended to. One dated November 25, 1907, is for the National Transcontinental Railway. It calls for 21,371 tons of 80-lb. rails, of which half is to be delivered by November 1, and the remaining half by April 1. It is reported that the Canadian Pacific Railway Company has placed an order with the Algoma Steel Company for 35,000 tons.

C. A. C. J.

San Francisco structural steel fabricators are endeavoring to induce the transcontinental lines to grant a lower rate of freight on plain rolled material than on fabricated work. No differential is now allowed on plain material, and consequently the Pacific Coast shops are badly pressed by their Eastern competitors. Appeals are being made to architects, contractors and possible investors, urging them to favor the local fabricators in placing orders for work of this kind.

Effects of Titanium on Cast Iron.

In view of the experiments made in this country in the use of titanium in iron castings, and the report on the subject presented at the Toronto convention of the American Foundrymen's Association by the Secretary, Dr. Richard Moldenke, the following, condensed from *Stahl und Eisen* of May 13, 1908, will be of interest. The original article was prepared by Bernhard Feise, Dresden, Germany:

By the alumino-thermic process of Kuhne almost pure titanium has been obtained recently. A test analysis showed the following impurities: Aluminum, 0.0035 per cent; iron, 0.0335 per cent; silicon, 0.0278 per cent; and carbon, 0.0078 per cent. Attempts have been made to introduce titanium into cast iron by adding the mineral rutile directly to the molten iron in the crucible. The experiments detailed here were conducted at the Royal Saxony Mechanical and Technical Institute at Dresden. They confirm the views generally held as to the favorable effect of titanium upon cast iron. The experiments embraced the determination of the tensile strength and the modulus of elasticity.

For a test material, normal cast iron of about 17,000 lb. per sq. in. was chosen, to which the pulverized titanium was to be added in amounts ranging from one-quarter of 1 per cent. to 1 per cent. The test bar was about 2 sq. in. in cross section, and nearly 2 ft. long, and was cast vertically. From this bar the normal test bar was turned down to a diameter of 25-32 in. All of the hardening skin formed in the casting was removed, so that there was a core of uniform texture. Since the tensile strength of one and the same bar fluctuates, even where the naked eye can perceive no flaw, four bars of each sort were cast so that from those of an estimated strength below the mean of four tests, only two were ruptured. These tests did not include the standard unalloyed bar.

The elongation measurements for the determination of the modulus of elasticity were taken up from the beginning on a bar in a Martin's testing machine. The load was increased gradually from the start, until the elongation ceased. At each step the amount was measured by a magnifying reflector. With each bar the load amounted to 6600 lb., corresponding to a tension of about 13,500 lb. per sq. in. In Table No. 1, the elongations are given for 1 cm. of measured lengths for the given tensions.

Table I.

Stress. Pounds per sq. inch.	Stress. Kg. per sq. cm.	Elastic limit in cm. × 10⁻⁴. Bar 0, without Titanium.	Bar ¼. 0.25 % Ti.	Bar ½. 0.5 % Ti.	Bar 1. 1 % Ti.
1,132	79.6	1	0.9	0.95	0.96
2,264	159.2	2.2	1.8	2.00	2.1
3,395	238.7	3.4	2.9	3.1	3.3
4,528	318.3	4.8	3.9	4.2	4.7
5,559	397.9	6.2	5.1	5.6	6.1
6,792	477.5	7.9	6.3	6.8	7.6
7,914	557.1	9.7	7.6	8.2	9.5
9,054	636.6	11.6	9.0	9.7	11.4
10,186	716.2	13.9	10.4	11.4	13.7
11,318	795.8	16.1	11.9	13.1	15.5
12,451	875.4	18.7	13.5	14.9	18.0
13.583	955	21.2	15.2	16.8	20.5

The influence of the alloy in reduced elongation is in part clearly recognizable. If the specific elongation is carried out as an abscissa and the tension as an ordinate, then a curve is obtained for the four different bars, as represented in Fig. 1. The curve drawn with even a smaller load is distinctly shown. At the same time, it must be recognized that the elongation does not increase proportionately with the tension, but, on the contrary, the augmentation is accelerated. Analytically, the course of the curve may be given by the equation of the power law, $e = a \times d^m$, in which a takes the sign of the coefficient of the modulus of elasticity for tension and $m > 1$.

According to Table II it appears that the ratio of elasticity in the same cast iron is not altered by the amount of its tensile strength, while with the same amount of load the four different bars show different values.

Table II.

Stress Lb. per sq. inch.	Stress. Kg. per sq. cm.	Modulus of elasticity = 1 ÷ a. Bar 0.	Bar ¼.	Bar ½.	Bar 1.
2,264	159.2	703,500	790,000	698,000	682,000
4,528	318.3	574,000	707,000	664,000	586,500
6,792	477 5	504,000	653,500	653,000	472,500
9,054	636.6	414,000	561,000	530,000	411,000
11,318	795.8	346,500	535,000	469,500	403,000
13,583	955	300,000	465,000	397,500	311,500

Cast iron without titanium has the greatest coefficient of tension for elongation, and in the series of bars in which titanium was used, the lowest coefficient applies

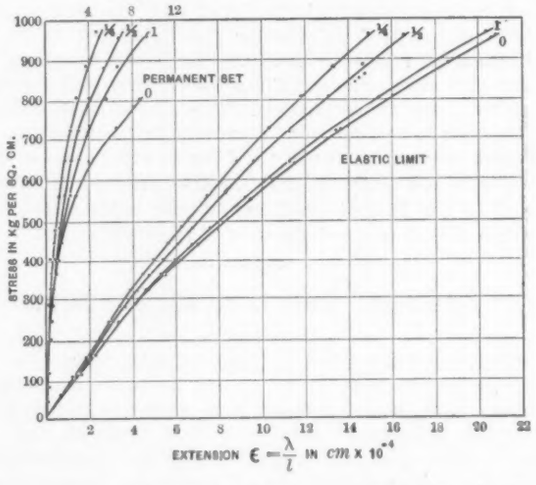


Fig. 1.—Curves Representing Tension and Elongation for Varying Percentages of Titanium.

to the bar with one-quarter of 1 per cent of titanium. It was supposed that in reducing the elongation of titanium alloy its tensile strength would be increased, which proved to be true, and, indeed, the tensile strength increased in proportion as the elongation was reduced. One quarter of 1 per cent. addition gave the greatest tensile strength; an improvement up to 35 per cent. is noticeable, from 17,494 lb. per sq. in. up to 23,610 lb. per sq. in.

Table III.

Cast iron.	Titanium added in percentage.	Tensile strength Kg. per sq. cm.	Percentage of increase.	Work. Kilogram-meters per cu. cm.	Percentage increase.
0	0	1,230	..	0.046	...
¼	0.25	1,660	35	0.050	8.7
½	0.5	1,410	15	0.053	15.2
1	1	1,340	9	0.066	43.5

From the delicate elongation measurements, a further insight is given as to the working power of each bar, and

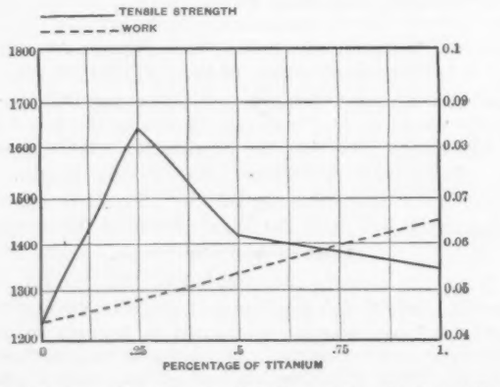


Fig. 2.—Diagram Showing the Relation of Tensile Strength and Work with Varying Percentages of Titanium.

this discovery leads to a valuation other than that of the tensile stresses. It is recognized that if a material possesses the greatest security against rupture, especially against dynamic stress, it will have a greater power of resistance to distortion on account of its greater tenacity. Dynamically, cast iron for parts of geometric shape or proportions will not be strained beyond its resiliency, for it has been found adaptable for such purposes as steam cylinders, rolls and steam pipe, subject to high and in-

creasing tensions, which are caused by high temperature differences, and by which, at times, the creation of stresses within the ingots, are known to be associated with the production of the material, requiring it to be of a high grade.

For this, however, the working power gives the best standard, and a knowledge of the latter is of the greatest value. That is to say, it is the mechanical work that is required to rupture the bar—the product of the strain and that which is brought about from time to time by this total elongation. According to the figures, an alloy of 1 per cent. of titanium does not increase the tenacity of the iron. The greatest increase of the working capacity amounts to 43.5 per cent. In Fig. 2 the tensile strength and working strength of the single bar due to the amount of titanium, are once more shown. These experiments confirm the long recognized fact that titanium, for its action upon the physical properties of cast iron, is of value, and exerts an undoubted good effect. In the year 1890 it was first observed by the Thomas Car Wheel Company that titanium greatly increased the wearing surface of their car wheels. Other observers have confirmed this result.

The Tremendous Loss in Railroad Earnings.

The *Financial Chronicle* presents in its issue of September 5 a detailed statement of gross and net earnings of railroad companies, operating 168,839 miles of road, and of gross earnings alone of roads representing 33,333 miles additional. The roads reporting both expenses and gross earnings show a loss of $172,868,595, or 16.58 per cent., in gross, attended by a reduction in expenses of $109,383,693, or 14.74 per cent., leaving, therefore, a loss in net of $63,484,902. This last is equal to almost 25 per cent. The 33,333 miles of road for which only gross earnings are reported show a loss of $24,217,196. The figures for the roads giving both gross and net are as follows:

Jan. 1 to June 30. (141 roads.)	1908.	1907.	Increase or decrease. Amount.	%
Miles of road....	168,839	167,447 +	1,392	0.83
	$	$	$	
Gross earnings...	863,860,965	1,036,729,560	—172,868,595	16.58
Operat. expenses.	632,606,894	741,990,587	—109,383,693	14.74
Net earnings..	231,254,071	294,738,973	— 63,484,902	24.97

The earliest months of the year made the best comparison as far as the gross was concerned, but the poorest comparison as to net, the reason being that the roads had not yet been able to get control of their expense accounts. In the later months, when the losses in earnings became extraordinarily heavy both in ratio and amount, a rigid policy of reduction in expenses enabled the roads to make a relatively good showing in the net. For the first six months of this year the roads reporting figures monthly showed the following percentages of decrease by months: January, 103 roads, 29.93 per cent.; February, 103 roads, 25.10 per cent.; March, 103 roads, 14.40 per cent.; April, 101 roads, 21.05 per cent.; May, 101 roads, 25.22 per cent.; June, 89 roads, 9.39 per cent. From 20 to 25 per cent. of the mileage of the country is unrepresented in these figures. The *Chronicle* says:

> We estimate that if we could have had returns for the missing mileage the result for January would have been a loss of, say, $29,000,000 in gross and of $18,000,000 in net; for February a loss of $26,000,000 in gross and of $13,000,000 in net; for March a loss of $34,000,000 in gross and of $10,000,000 in net; for April a loss of $45,000,000 in gross and of $16,000,000 in net; for May, $55,000,000 loss in gross and $18,000,000 in net; and for June, $46,000,000 loss in gross and $10,000,000 in net—giving for the six months combined a shrinkage of $235,000,000 in gross and of $85,000,000 in net.
>
> This prodigious falling off in 1908 contrasts very strikingly with the showing made in preceding periods, when for a decade there had been an almost uninterrupted expansion in earnings, year by year. For the first half of 1907, for instance, we found there had been a gain over the first six months of 1906 in the large sum of $145,000,000. In 1906 we computed that there had been an increase of $135,000,000 over 1905, and in 1905 that there had been an increase of $70,000,000 over 1904. In 1904 we made a decrease for the six months of between $18,000,000 and $20,000,000. Previously we estimated that in the six months of 1903 there had been an improvement of $115,000,000 over the six months of 1902; that similarly in 1902 there had been an increase of $50,000,000 over the year preceding; in 1901 an increase of $70,000,000; in 1900 an increase of $90,000,000; in 1899 an increase of $42,000,000, and in 1898 an increase of $68,000,000. Thus, altogether for the ten years prior to 1908 the improvement reached the prodigious sum of $765,000,000 Now, unfortunately, all this has been changed, and we are on the down grade—at a very fast pace, too.

Manganese Steel Rails Rolled at the Passaic Works.

Important work has been done in the past two months at the plant of the Passaic Steel Company, Paterson, N. J., by the Manganese Steel Rail Company. After the plant had been shut down and a receiver appointed the last named company arranged for the use of a portion of it to carry on the rolling of manganese steel rails on a scale sufficient to make a satisfactory demonstration of the success of its process, on which Winfield S. Potter, chemist and metallurgist, has been at work for a number of years. As a result of the recent operations at Paterson the Manganese Steel Rail Company now has on hand about 125 tons of 85-lb. manganese steel rails. Some rails have also been rolled in which various percentages of other commercial metals were used as alloys.

In view of the experimental work covering a number of years carried on at various steel plants looking to the production of a manganese steel rail and the well-known difficulties attending the rolling of such steel, special interest attaches to this recent achievement. In the ordinary manganese steel rails rolled at Paterson the percentage of manganese has ranged from 9 to 16, with an average of about 11.75 per cent. Counting in the special alloy steel rails, the average manganese content is somewhat higher than the above percentage. The carbon content has ranged from 0.90 to 1.25 per cent. Extensive tests have been made showing tensile strength in the manganese steel rails of from 140,000 to 145,000 lb. elongation of 35 to 45 per cent., and elastic limit of 60,000 to 65,000 lb. The ingots have been cast of a size sufficient to produce four 33-ft. rails. As is well known, the problem of securing manganese steel of the requisite plasticity for rolling is one upon which a vast amount of practically fruitless work has been expended, the usual manganese steel product being castings or forgings.

The Manganese Steel Rail Company, which is a New Jersey corporation, expects soon to be in the market with its product. The directors are the following: Winfield S. Potter, Mahwah, N. J.; Bayard L. Peck, Brooklyn, N. Y.; Fred W. Snow and Robert J. Davidson, Hillburn, N. Y.; Otis H. Cutler, Suffern, N. Y., and J. D. Gallagher, Glen Ridge, N. J. Winfield S. Potter, who has developed the process employed at Paterson, is a son of the late Mark L. Potter, who was a pioneer in the Birmingham, Ala., iron ore field, the last of his holdings of red ore lands having been taken over in 1906 jointly by the Tennessee Coal, Iron & Railroad Company and the Republic Iron & Steel Company.

The Monongahela River Consolidated Coal & Coke Company.

At the regular monthly meeting of directors of the Monongahela River Consolidated Coal & Coke Company, held last week in Pittsburgh, George W. Theiss, president, submitted the following report of output and earnings of the company for nine months of the fiscal year ended July 31, 1908, as compared with the corresponding period for 1907:

Tonnage.

	River.—Tons.	Rail.—Tons.	Total.—Tons.
1908	3,979,679	1,018,450	4,998,129
1907	3,744,182	1,442,478	5,186,660
Increase	235,497	.....	.....
Decrease	.....	424,028	188,531

Earnings.

	Nine months ending July 31, '08.	July 31, '07.	Decrease.
Gross earnings	$1,692,344.70	$1,751,213.36	$58,868.66
Less:			
Allowance for royalty...	349,626.42	346,053.42	*3,572.99
Allowance for depreciation	274,107.43	248,540.67	*25,566.76
Accrued taxes, estimated.	90,000.00	90,000.00	.....
Accrued interest on bonds	377,835.00	387,485.00	9,650.00
Net earnings.....	$600,775.85	$679,134.26	$78,358.41

* Increase.

Applications of Oil Burning Apparatus.

BY CHAS. M. RIPLEY, NEW YORK.

A unique application of the oil burning furnace is in the heating of coaches on electric divisions of steam railroads. The New York Central and the New York, New Haven & Hartford railroads have both installed vertical steam boilers in electric locomotives, and equipped them with oil burners, pressure tanks for oil and water, and utilized the compressed air system of the train in atomizing the oil. When the steam locomotive is detached from the train and the electric locomotive coupled on, the existing piping system of the train is still utilized to heat the cars. The expense of installing electric heaters in each car, the expense of power for these heaters, or the danger that would have resulted from coal stoves are thus avoided. The author described this adaptation more at length in *The Iron Age* of March, 1908.

Oil Burners in Bridge Works.

At the plant of the Pennsylvania Bridge Company, Beaver Falls, Pa., advantage has been taken of the economy of oil burning furnaces for rivet heating, &c. This equipment consists of a 10,000-gal. supply tank, buried in the ground outside the building and near the railroad switch to facilitate the unloading of the oil cars. A No. 0 Kirkwood oil pumping, heating and pressure regulating system, located in the shop, draws the oil from the supply tank, strains it, and, after raising the temperature to the proper point for complete combustion, pumps it to the burners under 20 lb. pressure. Compressed air for atomizing the oil is taken from the regular shop air line, and reduced by a regulating valve to 15 lb. before being piped to the burners. As only 150 cu. ft. of free air compressed to 15 lb. is required under this system for each gallon of oil burned the air taken for atomizing is hardly felt.

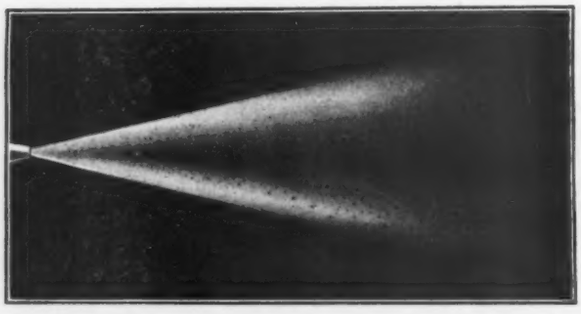


Fig. 1.—Appearance of the Flame from a Burner When the Oil Is Imperfectly Atomized.

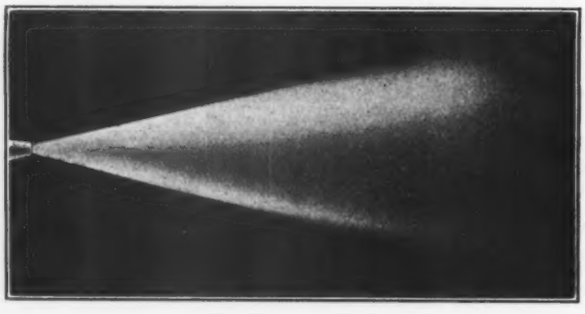


Fig. 2.—Complete Combustion in a Flame Where the Oil Is Perfectly Atomized.

There are five double door stationary rivet forges, with hearts 16 x 24 in.; four furnaces of similar design, but with doors and hearths 12 x 18 in., mounted upon a tank containing the oil supply and connected by flexible hose to the compressed air supply. The latter are designed to allow of being moved from place to place in the shop. Each of these furnaces is equipped with a burner so designed that the supply of the oil and compressed air are regulated by one lever. This adjustment maintains a fixed ratio between the oil and compressed air, so that there will always be perfect atomization. In this manner a careless or inexperienced operator cannot help having an efficient fire, and it is almost impossible to burn the rivets.

Blacksmith Shop of a Car Manufacturing Company.

The relative merits of oil, coal and coke as fuel for the forge shop are continually a matter for experiment and discussion. The writer recently had the privilege of visiting the factory of a well-known concern, and was much interested in the operation of the oil burning furnaces in the blacksmith shop. There were seven furnaces, ranging in size from 36 x 48 in. up to practically twice this size. These were used for heating king pins, bar iron, &c., some to a bending temperature, and others to white or welding heat. All of the seven were of the Kirkwood type, manufactured by Tate, Jones & Co., Inc., Pittsburgh, Pa. These were designed so that only enough compressed air was supplied to the burner to thoroughly atomize the oil, while the air for combustion was supplied by forced draft by a separate piping system. Thus the air for combustion is not drawn in from the surrounding air, which always makes a noisy burner, but is forced in under a few ounces pressure, at the rate of approximately 1440 cu. ft. of free air per gallon of oil burned. The king pins were made from 2-in. billets about 20 in. long, and were heated for a distance of 12 in. from the end, at the rate of 21 pins in 7 min., at the end of which time each was white hot and a ¾ x 2 in. slot was punched through in one operation.

Where hard coal or coke is used in the forge the time of tending fires and cleaning out the slag and cinders is frequently more of an item than is generally believed. From the speed with which the bars, plates and billets of various sizes were heated up it is fair to conclude that, for the same floor space, the oil furnace can approximately double the output, where high heats are required in work of about 2-in. diameter. Where simply bending or swaging heats are required, there ought to be easily a 50 per cent. increase in output for the same floor space.

Another advantage of the oil furnace is the ability to confine the heat to the part to be worked. The high blast required by the coke fire when high temperatures are desired causes considerable discomfort and hence delay in two ways. Not only are cinders scattered, but the flame comes out along the lower side of the piece and heats a greater distance than is desired. The oil flame, as applied, is concentrated more than any other, and so obviates this annoying feature of blacksmithing.

Steam Generation by Oil Fuel.

Since the oil must be atomized the initial starting of the fire requires either a supply of compressed air to turn into the atomizing nozzle until steam pressure has been attained (when it is switched off to steam by a three-way cock) or else a small boiler must be kept as an auxiliary. This disadvantage is offset in the fact that by starting the oil and throwing some oil soaked waste into the firebox the fire is instantly in full blast, which means a great saving of time for plants that close down entirely.

The change in the furnace from coal to oil fuel requires that the bridge wall be converted into a grill work of fire brick. In order that the flame will not be cooled by the inrush of cold air, the level of the grate bars should be lowered about a foot and two or three rows of fire brick laid on top.

Oil with a fire test of 180 or 200 degrees F. is considered as safe as coal. If oil with a test of 250 or 300 degrees is stirred with a red hot poker it will not ignite, and even a shovel full of hot coals thrown on its surface will immediately sink and be extinguished. Crude petroleum or fuel oil is the commercial name. Considering both convenience and safety, it is best to store the oil in an underground tank between the railroad track and the boiler room. The most successful result is obtained when the oil is fed to the burners under constant pressure and is previously strained and heated. The piping into the breeching of the boilers is frequently so arranged that a considerable rise of temperature is obtained by the time

the oil reaches the nozzle—some times as high as 200 degrees F.

The Importance of Atomization.

As is the case with any fuel, oil must be thoroughly mixed with air to secure complete combustion and no smoke from the stack. If the spray of oil contains some small and some large particles of oil, as in Fig. 1, the larger particles being supplied no more air than the small ones, will not be completely burned, and the result will be a coating on the boiler tubes, which is more difficult to remove than the soot deposited from a coal fire. This difficulty, however, has been overcome by the latest designs of nozzles, which give a steady fire and no smoke and are very efficient and satisfactory. Fig. 2 shows the appearance of a flame when the oil is perfectly atomized.

Triple Use of Oil Burners in Steel Mill.

Oil burners are being employed in some of the steel mills in three capacities: To heat open hearth furnaces, to serve as auxiliary where gas is used and to heat the ladles and prevent explosions and losses in them.

In open hearth work oil burners effect a saving for the following reasons: A lower grade of scrap or a greater per cent. of scrap can be used since oil is comparatively free from phosphorous and sulphur. Since the highest temperature of the oil flame is at the bottom, it is directly applied to the bath and not to the walls, arches and doors of the furnace. Owing to accurate control, the furnace can be banked for two or three days and then heated full blast in 12 to 16 hr. Small first cost. Large saving in labor. Oil burning furnaces have been operated with as low a consumption as 38 gal. of oil per net ton of charge.

When oil burners are installed as auxiliary equipment the oil burner is made hinged, so that it can be swung out of action until such time as the regular fuel supply might happen to fail. Thus it is ready at a moment's notice, and the heat of the bath and walls instantly brings the flame to an efficient state.

The swinging stand idea is used where oil burners are employed to heat metal ladles as in the open hearth auxiliary arrangement. Thus the burner can be lowered into the ladle, the long nozzle reaching clear to the bottom and thoroughly drying and heating the entire ladle.

Oil Burners in the Brass Foundry.

One of the large electrical manufacturing companies states that crucibles which lasted only 17 or 18 heats when coke was used as a fuel, now last from 30 to 32 heats since oil burners were installed in the foundry, that the cost of fuel has been cut in half, and that the annoyance, dirt and expense of handling ashes have been entirely eliminated. Although a brass foundry be originally built for coke, it can be easily piped for oil burners.

South American Notes.

SAN JUAN, C. A., August 3, 1908.

A mining district which deserves the attention of American capitalists is that of Tipuani, in Central South America. Most of this gold region is on the Eastern Andes, between 12 and 16 degrees south latitude, embracing portions of Peru and Bolivia. A number of foreigners are now washing gold on the banks of the Tipuani, the Beni and the Kaka, for a length of 100 miles. Mining machinery of all sorts and a number of dredgers are being imported into this district, especially by the Incahuari Dredging Company, which owns the new road over the mountains. The lack of transportation facilities has been the great drawback to this immense district, but several of the largest interests are getting together to build a railroad to the effluents of the Amazon. The Speyer interests, New York, sent out an expedition some time ago to survey the country for a railroad. The report was favorable, the gold region proving to produce from $1 to $3 per cubic yard by panning. As to exports, the rubber and precious woods were also considered important. In fact, one of those interested in the new railroad schemes is the Imambari Rubber Company. The line may eventually run from La Paz to navigable water on the Amazon. The Tipuani seems to be especially rich as far as Puerto Pando on the Beni, although the Kaka is still regarded as the richest of all. On the upper portions of these rivers the current is very rapid and the beds are covered with immense boulders, but in the lower portions the quartz gold and sand are easily reached.

Much has been said in the German press and other European periodicals about the robberies in the custom houses of Antofagasta and Valparaiso, Chile. The truth is that after due investigation by the Chilean Government, several robberies were proved at Antofagasta, but none in Valparaiso, and all that has been said of pirate ships on the coast of Chile is a mere invention of the German correspondents.

Chile's exports for the month of April were some $21,415,000, or $1,152,000 over the exports of March.

Conditions in Chile and Argentine are calm, due to the arrangements made by these two countries regarding the frontier or Andean question.

Operations on the Lima-Cuzo Railroad will begin in September, according to Peruvian Government announcement.

The Timbo Railroad on the Brazilian frontier will begin this month its extension lines into the Matto Grosso country.

The Brazilian Government has signed a contract with a French company for the new steel piers at Paranagua, the Atlantic seaport, which has a large trade in maté-yerba and cereals.

The German Emperor has invited the War Minister of Brazil to the military manoeuvers in Alsace-Lorraine, and to live at the Imperial palace—one of the indications that Germany never forgets to increase her commercial and other influences in Brazil.

By law the French Port Company of Rio Grande do Sul has been recognized for general business purposes.

A branch of the Bank of Brazil has been established at Santos. It is backed mostly by French capital.

Señor Estienne has received the contract to build a railroad in Matto Grosso, Brazil, to Porto Martinho, on the Paraguay River, and to the Parana. This concession is to last 99 years.

The new Brazilian railroad line from Santa Catherina to Rio Novo and Theresopolis is to have a 6 per cent. grade. It must be finished in three years.

Uruguay has enacted a law by which all machinery and machinery parts for linen manufacture are to be exempt from duties for three years.

The Bolivian Camaras (Legislature) is studying a project for a railroad from Minas Geraes to Northern Bolivia.

Argentina proposes to build lines of railroad from Villa Mercedes to Buena Esperanza. Also another line from San Luis to Quines, San Juan, Andino and the Chilean frontier, to become eventually a branch line of the Continental-Transandino.

Several large cargoes of rails and railroad material have arrived from the United States at the ports of Buenos Aires, Campana and Rosario di Santa Fé. C.

The Mining Engineers.—The programme of the forthcoming meeting at Chattanooga of the American Institute of Mining Engineers promises to be one of special interest. On Friday, October 2, there will be papers relating to iron and steel, especially new records of practice with the Gayley dry blast process, by Edward Bailey Cook of the Warwick Iron & Steel Company, Pottstown, Pa.; by Theodore W. Robinson, vice-president of the Illinois Steel Company, Chicago, and by Dr. R. W. Raymond. R. H. Sweetser, Columbus, Ohio, has a paper entitled "Blast Pressure at the Tuyeres and Inside the Furnace," and John B. Miles, Philadelphia, will present one on "The Relation of Slow Driving to Fuel Economy in Iron Blast Furnace Practice." There will also be submitted the report of the Institute Committee on Steel.

The next annual meeting of the Society of Naval Architects and Marine Engineers will be held at the Engineering Building, New York, November 19 and 20.

A Special Milling Job.

Economy in the use of all machine tools depends above all else on keeping them actually at work as much of the time as possible, *i.e.*, on reducing the time lost between cutting operations. Much thought is spent on designs of parts so as to accomplish this, and in many cases tools are built specially to accommodate difficult forms, and thus minimize the operations of setting work during which the tool is idle. A piece which requires a number of settings to plane all the surfaces is shown by the drawing, Fig. 1,

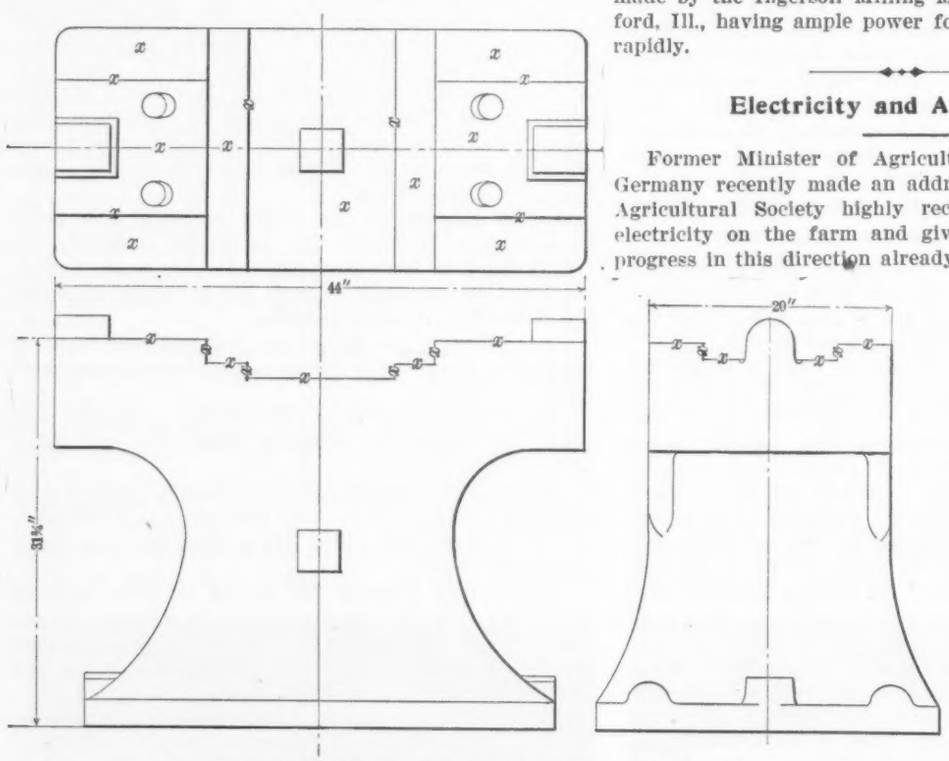


Fig. 1.—Top, Side and End Views of the Piece of Work.

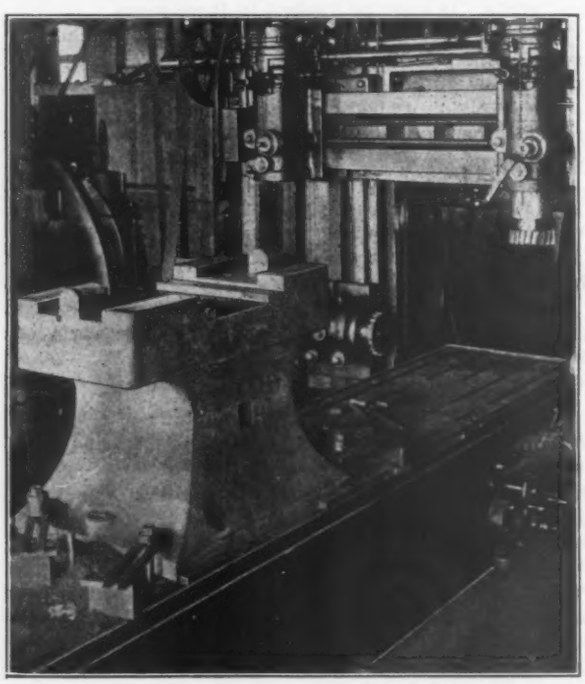


Fig. 2.—The Machine on Which It Is Finished at One Setting.

where the surfaces marked *x* are those requiring finishing. Fig. 2 shows the work as it has been milled at one setting on an Ingersoll milling machine.

The operations commence with roughing out the base, commencing with the bottom surface, and taking each face as it comes. The finishing is in the same sequence. Two spindles with power cross feed are used, and no time is lost in changing cutters. There is a saving in time of about 60 per cent. over that required to do the work on a planer, largely because there is less interruption of the cutting operations.

The machine shown is a stock four-head machine, made by the Ingersoll Milling Machine Company, Rockford, Ill., having ample power for finishing the surfaces rapidly.

Electricity and Agriculture.

Former Minister of Agriculture Von Podbielski of Germany recently made an address before the Prussian Agricultural Society highly recommending the use of electricity on the farm and giving illustrations of the progress in this direction already made by German agriculturists. United States Consul R. J. Thompson, at Hanover, addressed some inquiries to Mr. Von Podbielski, receiving in reply the following interesting statement:

"If even a very small profit is to be derived from agricultural work, the farmer is bound to use machinery instead of day labor, because the wages for the latter are steadily increasing. Electricity is the power wanted and is the best adapted to the work. Electricity is always at hand when the proper conductors are provided. Until very lately it could not be used extensively on account of the great price for the kilowatt-hour, charges of from 40 to 60 pfennigs ($0.0952 to $0.1428) for the kilowatt-hour excluding its use for agricultural purposes. According to my calculations the price for the kilowatt-hour in Germany, in order to leave a reasonable profit, should be no more than 20 pfennigs ($0.0476); and if installations, already in existence, of turbines are employed it is possible to furnish electricity at such a price. At our coal centers the kilowatt-hour is already furnished at from 6 to 7 pfennigs ($0.014 to $0.0166).

"The use of electricity in agricultural work may be classified as follows: (1) About the barnyard as working the fodder cutter, corn cleaner, crushing mill, hauling and unloading of hay, and, on large farms, smithy and wheelwright work, and, further, for lighting the stables and the houses, and (2) in the fields, pulling the plow, running the machines, reapers, &c., and threshing.

"There is no difficulty in installing the machines referred to in the farmyard, but the expense for the use of electricity in the fields is much too high as yet. The strong conductors and cables are too expensive, and the plow run by electricity does not as yet work satisfactorily. I feel sure that electrical centers will soon be installed in the country, and that the electrical force thus provided will be employed first of all for agricultural work."

The production of gold and silver in California in 1907, as reported from the mines to the United States Geological Survey, was 809,213 fine ounces of gold, valued at $16,727,928, and 1,138,858 fine ounces of silver, valued at $751,646—a total value of $17,479,574. From 1906 these figures show a decrease of $2,004,524 in value of gold, and of $66,182 in value of silver, a total falling off of $2,070,708. The average commercial value of silver in New York, per fine ounce, in 1906 was 67 cents; in 1907 it was 66 cents. The standard value of gold is $20.671834625323 per fine ounce.

Coke Oven Gas for Power Generation.

In the discussion of the paper read by W. H. Blauvelt on "The By-Product Coke Oven," before the Detroit meeting of the American Society of Mechanical Engineers, J. B. Bibbins presents some data regarding the first coke oven gas installation of large size in this country:

This development has taken place at Lebanon, Pa., where two large by-product coke plants are in operation, one of the Semet-Solvay and the other of the United Otto type. Until about a year ago there was no opportunity to dispose of the by-product gas from either of these plants, and all the surplus was allowed to go to waste. In 1907 two power projects were developed—one to operate the works of the American Iron & Steel Mfg. Company, and the other to establish a large gas engine plant near the ovens to furnish power for the ovens and mines supplying them, and to transmit a large amount of surplus power to the city of Lebanon for public utilities. The first of these plants was installed in 1907 and has been in continuous operation since, from gas piped several miles under moderate pressure from the Semet-Solvay coke plant. The second project will be actively pushed forward within the next few months. Both employ horizontal double acting engines of the twin tandem type of 500 and 1200 hp. capacity, respectively.

At the time of this first Lebanon installation very little was definitely known concerning the possible success or failure of this kind of gas, as the only precedents in this country were a small vertical single acting engine at Syracuse and a larger engine at Camden, N. J., which was in commission for several years, operating on poor gas from the last half of the coking run.

Sulphur Troubles Overcome.

The results of a year's operation at Lebanon have been extremely satisfactory. Trouble anticipated from excessive hydrogen content has not developed, and after some experimenting for sulphur removal, no serious trouble has resulted from the somewhat high sulphur content. At the outset the builders stipulated a maximum content in the gas of 50 per cent. hydrogen by volume and 0.02 gr. of sulphur per cubic foot. Both these limits have been exceeded without resulting trouble. Although pooled gas (*i. e.*, run of oven) is supplied, the hydrogen content at times runs as high as 66 per cent. by volume, and the sulphur 1½ gr. per cubic foot.

This sulphur exists in the form of H_2S and CS_2 in varying proportions. The gas is purified in rectangular oxide purifiers containing iron oxide sponge prepared on the ground. By giving proper attention to this apparatus and renewing one layer of oxide each week the sulphur may easily be reduced to 80 or 85 per cent. of the original content, which runs from 2½ to 4 gr. per cubic foot in the crude gas. This leaves about 0.6 gr. sulphur in the gas supply to the engine, much more than was originally considered safe.

As to the effect of sulphur upon the engine, it apparently passes through the combustion cycle without difficulty, provided three simple remedies are employed:

a. To insure absolute separation of the water and gas around the cylinder valves or packing;

b. To flush the rods thoroughly with continuous streams of engine oil;

c. To maintain the piston cooling water circuits at a fairly high temperature, sufficient to prevent condensation and the consequent formation of acid.

In all modern designs a continuous return lubricating system is employed. It is a simple matter to provide a small stream of oil in front of each packing cage, which returns to the filter and is again pumped through the system without loss.

A fairly high piston water temperature is advantageous, not only from the sulphur standpoint, but to facilitate lubrication as well. In fact, most of the packing trouble experienced in the early days of the horizontal design was found to be due to running the rods too cold, as a matter of precaution.

During the early experience of the Lebanon plant the sulphur reduction decreased for some time to a point as low as 50 per cent., or 2.0 gr. per cubic foot at the end of the week. Recently a measurement of the rod diameters showed that the reduction during the year had been extremely small, and at one packing could hardly be detected. This seems to indicate that in a proper design and with necessary precautions the sulphur problem is not so serious as anticipated. Recently this engine was operated 6 hr. on crude unpurified gas containing over 3 gr. of sulphur, and has been so operated at intervals during the past year. With normal lubrication the rods tended to run dry in places, which might cause considerable trouble at the packing, but by flushing the rods with a small stream of oil this trouble was immediately corrected.

The Relative Value of Principal and Other Products.

One important phase of the Lebanon situation is the relative value to the coke oven operator of principal and by-products, and herein lies the crux of the application of coke oven gas for power purposes. The power user of course desires a guarantee of uniformity of quality and continuous supply; and this necessitates the operation of the ovens for the purpose of delivering the by-product, even in periods of decreased demand for coke, tying up the capital of the operator in stored coke, to his serious embarrassment.

At Lebanon the gas is supplied by contract that fixes the rate, but not the supply, which is dependent on the operation of the coke oven plant. This provides cheap power and heat for the consumer, and relieves the coke oven operator of the above objection. On the other hand, this arrangement would be entirely unsatisfactory to a consumer contracting for a definite service, unless he took the precaution of installing a relay producer equipment. Such a plant has already been installed at Lebanon to provide for a contingency of this nature, and at the prevailing low price of producer apparatus would certainly be cheaper in the long run than to employ steam power, providing the coke oven gas could be obtained at a reasonably low figure in comparison with coal. This whole question therefore resolves itself into an economic one, which both producer and consumer must soive.

Another point of interest in regard to the Lebanon installation is that it is an alternating current system with generators solid coupled, and operating at a frequency of 40 cycles per second. The unit operates regularly in parallel with an adjoining steam plant containing both tandem and cross compound steam engines. At this intermediate frequency no trouble whatever has appeared in parallel operation.

The Dodge Field Day.—The factory force of the Dodge Mfg. Co., Mishawaka, Ind., held its second annual field day under the auspices of the Dodge Club, on August 15. Employees of all departments of the great Dodge Works, with relatives and friends to make up a total of more than 1000, were taken in two special trains direct from Mishawaka to Lake Maxinkuckee, about 40 miles to the southward. In addition to the general pastimes of boating, bathing, fishing and other diversions of a big family picnic, there was a programme of field events, consisting of races, contests, games, &c., in which many were entered, and from which much amusement was derived. The Dodge Company met all expenses of transportation, bands, orchestras, and other general features of the undertaking.

Records of the steerage passenger movement kept by the steamship companies show that the emigration from the port of New York in August was 63,642, or 12,592 more than in August, 1907. For the year, to September 1, emigration was 505,774, against 258,268 in the first eight months of 1907. Immigration was 252,238 in the first eight months, against 980,289 to September 1, 1907, a decrease of 728,051. The excess of emigration over immigration in the first eight months of this year was 253,536.

Trade Publications.

Manual for Engineers.—University of Tennessee, Knoxville, Tenn. Eleventh edition. Pocket size. Flexible leather cover. Gives tables and other data for engineers and business men. Price, 50 cents per copy.

Crucible Steel Products.—Bethlehem Steel Company, South Bethlehem, Pa. Catalogue. Size, 4 x 7 in.; 36 pages. Gives a description of the principal high speed tool steels made by this company and classification of the temper numbers and carbon contents. Considerable data is also given on carbon steels, giving the temper numbers corresponding to the carbon contents and the uses for which these are best adapted. Also shows the shapes in which rock and drill steels are made and catalogues other special steels.

Safety Valves.—Consolidated Safety Valve Company, 85 to 89 Liberty street, New York. Pamphlet, 8 pages. Illustrates and describes the Consolidated pop safety valve, Board of Trade marine type. This valve combines new features developed by the high duty demands of modern boiler practice with the highly approved principles of construction which have long been used by the company. The features of the valve are fully described. It is furnished in either single or duplex patterns.

Leather Belting.—Charles A. Schieren Company, New York. This is a neat little card on which are mounted a barometer and a thermometer. The barometer is a piece of fabric cut in the shape of a duck, illustrating the well-known Duxbak belting trademark of the Schieren Company. The fabric is chemically treated so that it changes color to forecast weather changes. The printed matter consists of appropriate arguments regarding the durability of Duxbak belting under any weather conditions.

Recording Instruments.—Bristol Company, Waterbury, Conn. Four bulletins for insertion in binder. Bulletin No. 85 is devoted to the Wm. H. Bristol indicating electric pyrometer, and gives full size specimen scales for the indicating form, and practical lists of charts for the recording form. No. 89 contains a brief description, a price-list, and a list of users of Bristol's electric time recorder. No. 91 deals with the class I recording thermometers for atmospheric temperatures and ranges to 250 degrees F. These thermometers are adapted for recording temperatures of air, gas or liquids in tanks, pipes, mains, closed spaces, cold storage and drying rooms. No. 93 pertains to the class III Bristol's high range recording thermometers for working ranges from 40 to 800 degrees F., for kilns, ovens, flue gases, superheated steam, core ovens, &c.

Oil Filters, Pumps and Engine Jacks.—Vandyck-Churchill Company, 91 Liberty street, New York. Three pamphlets. One deals with the White Star oil filter, which purifies used oil from machinery bearings so that it may be fed again to the rubbing surfaces. The operation and construction of the filter is explained. The other two pamphlets pertain respectively to the Richardson model M automatic sight feed oil pump and the Chicago engine jack.

Automatic Mailing Machine.—Nielsen Mailing Machinery Company, Erie, Pa. Catalogue. Size, 6¾ x 9½ in.; pages, 32. Contains an illustrated description of the Auto-Mailer, a machine for folding, wrapping, sealing, addressing and assorting newspapers, magazines or pamphlets, discharging them into mail bags at the rate of 4000 an hour.

Boring Mills.—Niles-Bement-Pond Company, 111 Broadway, New York. Catalogue. Size, 9 x 12¼ in.; pages, 46. Gives illustrations and descriptions of Niles boring and turning mills, made in sizes of from 30, 100 in. to 20 ft. Also shows 10-16 ft. extension mills, 10-16 and 14-20 ft. extension mills with boring reach and 16-25 ft. heavy pattern extension mills. Attachments for Niles mills, such as motor drive, speed box, chasing, slotting and taper turning attachments, &c., are shown. A 66-in. tire mill with fixed cross rail and one of the same size with movable cross rail, and others in 90, 96 and 100 in. sizes are included.

Spiral Riveted Pipe.—American Spiral Pipe Works, Chicago, Ill. Pamphlet. This endeavors to call attention to the many different uses for which Taylor's spiral riveted pipe is especially adapted. Illustrations show its construction and also various installations. Testimonial letters are included.

Motors and Blowers.—Emerson Electric Mfg. Company, St. Louis, Mo. Bulletins. No. 3134, superseding No. 3111, refers to single phase induction motors of 1-40 and 1-20 hp. of the light load start type for intermittent service. No. 3306 deals with electric blowers for furnaces for alternating and direct currents for use in residences.

Air Compressors.—Chicago Pneumatic Tool Company, Chicago, Ill. Advance sheets of catalogue No. 26. Size, 6 x 9 in.; pages, 27. These sheets give illustrations and details of duplex, compound and single steam driven Franklin air compressors, and single, duplex and compound air compressors. Specifications of air receivers are included.

Furnaces and Heaters.—Rockwell Furnace Company, 26 Cortlandt street, New York. Catalogues and circular. One of these catalogues is devoted to melting furnaces for melting all metals, tinning, galvanizing, tool hardening and all operations requiring molten metal or other heated baths. Illustrations and brief descriptions of the numerous types of furnaces are given, together with tables of specifications. Special tiles, oil storage tanks, ladle heaters, oil burners, fuel oil pumping system, pressure blowers, &c., are also included. The other catalogue deals similarly with portable heaters for heating work which is too bulky or inconvenient to remove to a furnace and where it is desirable to take the heater to the work, such as annealing, hardening, expanding, bending, brazing, skin drying, lead melting, rivet heating, &c. The circular treats of enameling furnaces using oil or gas as fuel.

Boring Mill.—Gisholt Machine Company, Madison, Wis. Pages 9a and 10a for insertion in binder. These contain an illustrated description of the Gisholt 42-in. boring mill and point out some distinctive features.

Steel and Iron.—Brown Bros., Inc., Wayne Iron & Steel Works, Pittsburgh, Pa. Pamphlet, 3½ x 6 in., 22 pages. Catalogues the various brands of iron and steel made by this company, giving the base price and extras for different shapes and sizes of rolled iron and steel.

Crucible Steel.—Heller Brothers Company, Newark, N. J. Catalogue No. 7. Takes up the subject of crucible steels. Gives price-list of annealed disks, drills, die blocks, file and rasp steels, as well as several pages of information regarding computations of weight of steels.

Tool and High Grade Steels.—Halcomb Steel Company, Syracuse, N. Y. Catalogue, 4 x 6 in., 88 pages. Gives interesting information regarding the early manufacture of high speed steel in this country. The catalogue is devoted to crucible steels and gives facsimiles of the labels used on the different grades of steel. Special steels made by this company are likewise catalogued and prices of special shapes are given.

Tool Steels.—The John Illingworth Steel Company, Frankford, Philadelphia, Pa. Catalogue, 3½ x 6 in., 28 pages. Facsimiles of the brand labels used on the tool steels of this company are shown in the catalogue, which also describes the uses to which the different varieties of steel are adapted and gives information regarding classification, the sizes regularly made and price-lists.

Disk Grinders.—Gardner Machine Company, Beloit, Wis. Loose leaf catalogue. Illustrates, describes and gives lists of regular toolroom equipments and specifications of the company's Nos. 2 and 4 improved disk grinders, Nos. 12 and 14 plain disk grinders, Nos. 12 and 14 combination type and No. 14 standard improved disk grinder. The plain, universal swinging, universal lever feed, and semiuniversal lever feed tables are shown and explained, and also 18-in. and No. 4 14-in. wheel presses. The back of the catalogue contains accounts of actual tests made on the Gardner improved disk grinders. A list of disk grinder supplies is appended.

Blowers.—P. H. & F. M. Roots Company, Connersville, Ind. Catalogue. Size, 7½ x 10 in.; pages, 41. Shows various installations of Roots' smelting and high pressure blowers, and describes their operation and construction. Valuable information concerning blowers and useful tables and data are included.

Westinghouse Nernst Lamp.—Nernst Lamp Company, Pittsburgh, Pa. Pamphlet. Deals with the Westinghouse Nernst screw burner lamp and single glower lamp and points out their adaptability to artistic fixture design. These lamps are made for use on either 110 or 220 volt circuits, and the same lamp operates equally well on either alternating or direct current.

Motors and Buffing Lathes.—Emerson Electric Mfg. Company, St. Louis, Mo. Bulletins. No. 3135, superseding No. 3116, pertains to single phase induction motors of the light load start type for intermittent service in 1-10, ⅛ and 1-6 hp. sizes. No. 3706, superseding No. 3702, refers to electric buffing lathes for alternating and direct currents, and No. 3958, superseding No. 3956, to motors for family washing machines.

Tumbling Barrels and Fanning Mills.—Baird Machine Company, Oakville, Conn. Bulletins. No. 300, which supersedes all previous editions of tumbling barrel bulletins, deals with the Baird oblique tilting tumbling barrels, the important feature of which is that the contents of the tumblers are visible at all times while work is in progress. Some testimonials and a list of users are included. No. 399 treats of the Baird fanning mill, for separating sawdust from small metal parts after tumbling and also for separating chips from screws and similar work.

Rod and Yoke Ends.—Billings & Spencer Company, Hartford, Conn. Pamphlet. Gives illustrations, price-lists and dimensions of A. L. A. M. standard yoke and rod ends, and B. & S. drop forged yoke and rod ends.

The report of Receiver O. L. Layne of the Robert Field Company, Cincinnati, which failed several months ago, shows receipts of $50,483.95 and expenditures of $41,576.99, leaving a balance on hand of $8906.96. The assets are scheduled at $49,055.20, most of which is in claims, but many of these are disputed. The liabilities are returned as $21,631.50.

Wood's 1908 Hydraulic Riveter.

An improved outside packed hydraulic riveter, known as the 1908 model and built by William H. Wood, Media, Pa., is shown in Fig. 1. Fig. 2 is a detail of the operating mechanism showing the quadruple plungers which are of equal areas and diameters so that they are interchangeable. The riveter is made so that the plungers can be detached from the main part of the head, hence the alignment is maintained. The cylinders are fitted with a distributing valve attached to the balanced main valve for operating them.

This riveter can be worked at 25, 50, 75 or 100 tons pressure. Three pipe connections work the four plungers. When working with 50 tons pressure the valve is set to the central pipe which connects with the two opposite cylinders: when working with 25 tons pressure it is set for the top pipe; when working with 75 tons pressure it is set to work through the central and top pipe connections, and when working with 100 tons pressure the valve is set to work through all three pipe connections. The push back cylinder is arranged in the same form as in the older designs of the builder and practically balances the driving head. The four plungers are each 6¾ in. in diameter, and when supplied with fluid at a pressure of 1500 lb. per square inch will give a total pressure of 100 tons. The stroke of the riveter is adjustable to any amount up to a maximum of 6 in.

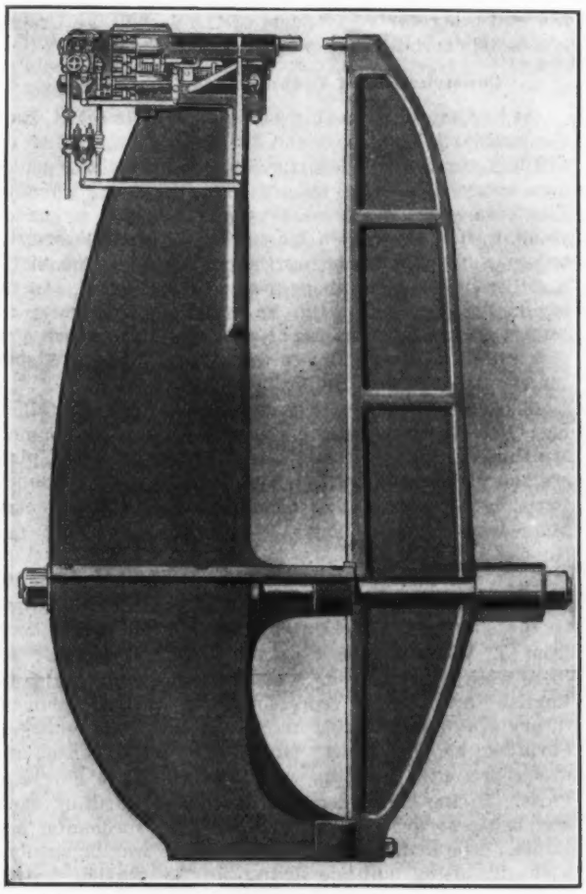


Fig. 1.—The 1908 Outside Packed Hydraulic Riveter Built by Wm. H. Wood, Media, Pa.

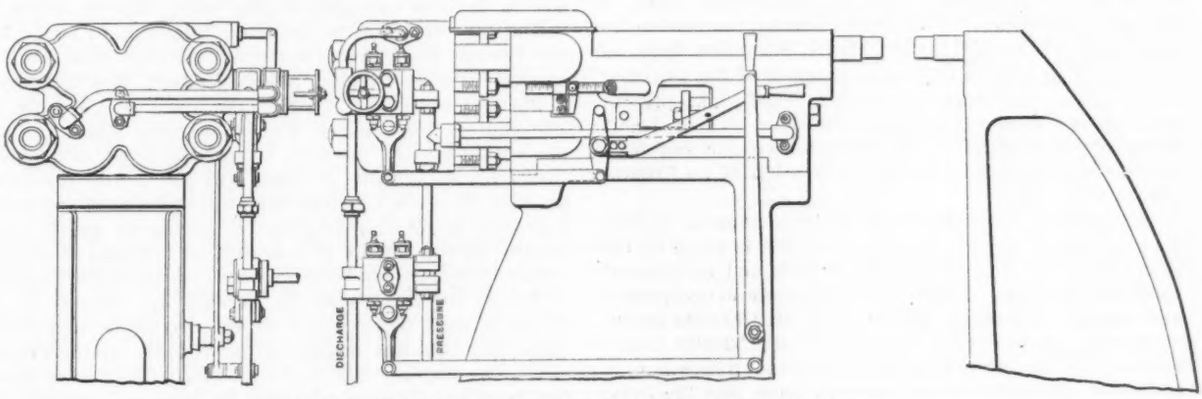


Fig. 2.—Detail of the Operating Mechanism of the 1908 Riveter.

The Philadelphia Foundrymen's Association.

The 179th regular meeting of the Philadelphia Foundrymen's Association was held in that city Wednesday evening, September 2. It was the first after the summer recess, and also marked the removal of the association's headquarters from the old Manufacturers' Club House to the club's new quarters at the corner of Broad and Walnut streets. President Thomas Devlin and Secretary Howard Evans held an informal reception previous to the meeting in the old Clover room, where the future meetings of the association will be held. On calling to order, President Devlin expressed his appreciation of the large attendance, and hoped that the meetings during the year would all be well attended, and that the attending foundrymen would gather useful information from the various papers and discussions.

Application for membership was received from J. C. Moyer & Co., iron, steel, coal and coke merchants, Pennsylvania Building, Philadelphia, on which favorable action was taken. The treasurer reported a very substantial balance on hand, with all bills paid.

Thomas D. West, Sharpsville, Pa., president of the American Anti-Accident Association, was introduced and read a paper on "Foundry Accidents and Safety Devices." Mr. West is making a campaign to interest the foundry trade in the prevention of accidents. He has had prepared a plan, which will shortly be presented to all foundrymen, to secure statistics of the underlying causes of accidents in their plants. When completed, the data will be used to combat legislation unjust to industrial interests, and therefore the writer asked the hearty co-operation of all engaged in the trade. Mr. West also read a paper on "The Burning of a Broken Propeller Blade," which is given practically in full elsewhere in this issue. A discussion followed the reading of the paper, and cases were cited in which this class of work was done under slightly varying circumstances.

Following the meeting a luncheon was served in the dining room of the club, and brief addresses were made by H. L. Haldeman, G. C. Davies, Thomas Devlin, and J. S. Hibbs.

A very troublesome factor in the struggle to get the German pig iron producers to renew the old Duesseldorf syndicate, or to extend it to cover the whole of Germany is Prince Donnersmarck, the owner of great collieries and metallurgical works in Upper Silesia. Some years since he built a blast furnace plant, at tidewater, the Kraftwerk, near Stettin-on-the-Baltic. It remained independent, and its commercial management was aggressive. Later, he purchased the Niederrheinische furnaces at Duisburg-on-the-Rhine, and now refuses to renew his contract with the syndicate unless his allotment is increased from 80,000 to 240,000 tons annually.

The Le Creusot Works.

Special Agent Capt. Godfrey L. Carden makes the following report to the Bureau of Manufactures, Department of Commerce and Labor, of a visit to the largest steel plant in France:

The name Le Creusot is to France what Essen is to Germany. In the latter place Krupp holds sway. At Le Creusot it is Schneider & Cie. The total number of men carried on the payrolls of Schneider & Cie. approximates 20,000. Of this number 12,000 are in the Le Creusot shops. The remaining 8000 are scattered among the subsidiary plants at Chalon-sur-Saone, Havre, Champagne-sur-Seine, Decize, Mazenay, Creot et Change, Montchanin et Longpendu, and Perreuil.

The shops at Le Creusot cover 2400 acres. Fancy a small pocket in a low range of hills, jammed with furnaces and machine shops, with a canal winding through in and out to the plains beyond, with houses and streets stretching up the hillsides and struggling to reach above the line of smoke, and one sees Le Creusot. It recalls the Allegheny country, the landscape, the industries and all the accompaniments of a great steel and iron section being similar to our Pittsburgh territory. It may be said that from Le Creusot to St. Etienne iron and steel are the great products. The industries of this great Le Creusot-St. Etienne District are, next to the steel interests in the east of France, the most important in the iron and steel line in all France.

Origin and Development of the Works.

An English engineer founded the Creusot works in 1782, and Louis XVI was interested in the plant. It was known then as the Royal Foundry. From 1793 to 1814 Le Creusot was utilized almost wholly for the manufacture of cannon. In 1826 the plant was sold to an English company known as the Société Mandy-Wilson et Cie. In 1828 there was formed a new company known as Société Anonyme des Mines, Forges et Fonderies du Creusot et de Charenton. From these numerous changes it may be gathered that business conditions in France following the Napoleonic era were not the best.

In 1836 J. Eugene Schneider and his brother Adolphe purchased the Creusot Works and two years later they built the first locomotive constructed in France. Eugene Schneider may really be called the founder of the present establishment. From all accounts he was a wonderful man intellectually and in his ability to control men. Later in years he was president of the French Legislature, and lived a most active and eventful life until almost the year of his death, which occurred in 1875. Henri Schneider, son of the founder, became associated with his father in 1867, and later took over the active control of the plant. During his lifetime many of the most important of Le Creusot developments were inaugurated. Like his father, Henri Schneider took an active part in politics and was a member of the Chamber of Deputies. His death occurred in 1898. The present head of the works is Eugene Schneider, son of Henri Schneider and grandson of the founder. He has been actively identified with the administration of Le Creusot affairs since 1896.

Schneider & Cie. own about 14,000 workmen's houses, with gardens attached. Liberal provision is made by the company in the way of annual pensions and endowment funds for services. A staff of eight doctors is maintained and there is a hospital with a fund of 2,000,000 francs ($386,000). Schneider & Cie. pay about 2,500,000 francs annually in the interest of the workmen. The administration of affairs is divided between Paris and the foundry offices.

Variety of the Output.

Le Creusot first came into existence as a mining locality, and a mine is still worked within the Schneider property, but it only produces now about 50,000 tons of coal per year, whereas the Schneider works require about 550,000 tons yearly. In consequence additional coal is drawn from the company's collieries at Decize and Montchanin. These two colleries supply about 200,000 tons of coal.

Originally started as a foundry, Le Creusot has developed until to-day there is an annual output of 140,000 tons of iron, 155,000 tons of Martin and Bessemer steel and 150,000 tons of finished steel and iron, the various products comprising iron and steel billets, rails and railroad materials, steel construction work, ship plates, locomotives at the rate of five per month, artillery of all calibers, armor plate at the rate of about 5000 tons per year, equipments for ship batteries, electrical materials, steam engines, turbines and gas engines, railroad wheels and axles, castings of all sizes, and at the Chalon-sur-Saone plant torpedo boats are built. It was at this last plant that the material was turned out for the beautiful Alexander III bridge, of Paris, and the bridges over the Rhone and Danube bearing this company's name. Bridges have been sent out from Chalon-sur-Saone to Chile, Tonkin and other far away parts of the world. Le Creusot also builds turbine engines of the Zoelly type.

Construction of Locomotives—Tools Used.

At Le Creusot it was my good fortune to meet M. Rais, the commercial manager, and M. Panier, the chief of the artillery commercial department, and from these gentlemen every facility to inspect the works was afforded. The locomotive shops were very busy, and it is my understanding that the reason for so many French locomotive orders going abroad during the past year is due to the inability of the home shops to meet the demand. In the locomotive department the American machine tools are comprised of the following: One Niles planer, one Fosdick radial drill, two Brown & Sharpe tools, one Gisholt turret lathe and two Bullard tools.

The foreign makers were represented by the following: Fetu-Defize, Liege, horizontal borers; Ducommun, Mulhouse, drills and turret lathes; Longdoz, Liege, planers and drills; Ateliers Demoor, Brussels, lathe; Bouhey, Paris, lathes and milling machines; Smith & Coventry, Manchester, lathes; Duval-Pichet, Paris, milling machines.

Although there are some milling machines in this department, I observed relatively very little milling work. In the shaft department were found heavy boring tools from J. Whitworth & Co., Manchester, England. All these were motor driven. Thomas Shanks & Co., also an English firm, were represented in this department through horizontal boring mills. I notice that Bouhey of Paris had supplied a very large boring mill. Ducommun was represented here, as were also Elwell & Seyriz of Paris. In the boiler department all plate drilling work was being performed with Bouhey and Ducommun machines. The drilling on all boiler heads was being done with jigs using multiple drills. In the marine department heavy Ducommun and Société Alsacienne tools were being used for planing. Schneider & Cie. have themselves manufactured a number of very heavy tools for use on turbine and ship engine work, among others a boring mill of 10 m. in diameter, weighing 70 tons. In the marine department American machine tools are in service from the Gleason Works, Bullard, Bouch, Brown & Sharpe, Acme, and the National-Acme Mfg. Company. The engines for the new French warship Edgar Quinet are building at Le Creusot, comprising three engines of 12,000 hp. each. One of these was practically complete on June 23, when I visited the works. Some of the casting work in Le Creusot shops is as fine as any I have seen in Europe. This is a branch of business in which Schneider & Cie. can well lay claim to the highest merit.

I was informed that Le Creusot has enough work ahead in some departments to last two years, and I assume that this has largely to do with the artillery and locomotive orders. My views on this subject have been confirmed on further reference to Messrs. Schneider & Cie. In the field gun department American tools come somewhat more into evidence, but I am compelled to say that our American tools are not represented in this great plant to the extent which one would expect to find.

American and Other Foreign Tools.

The American tools found in service, in addition to those previously mentioned in other departments, comprise the following:

Brown & Sharpe, Providence, R. I., vertical millers; Pratt & Whitney, Hartford, Conn., lathes; Norton Grinding Company, Worcester, Mass., grinders; Fosdick Machine Tool Company,

Cincinnati, Ohio, boring machines; Niles Tool Works, Hamilton, Ohio, planers and drills; W. F. & J. Barnes Company, Rockford, Ill., drills; Hendy Machine Company, Torrington, Conn., shapers; Defiance Machine Works, Defiance, Ohio, planers; Gisholt Machine Company, Madison, Wis., five turret lathes; Potter & Johnson, Pawtucket, R. I., automatic turret turning and chucking machines to the number of about 20; National-Acme Mfg. Company, Cleveland, Ohio, threaders.

The foreign makers in the gun department were represented by the following:

John Lang & Sons, Johnstone, Scotland, borers; Barriquand & Marre, Paris, millers; H. Ernault, Paris, vertical millers; Bouhey, Paris, horizontal borers, vertical drills and slotters; J. E. Rheinecker, Chemnitz, vertical millers; George Richards & Co., Broadheath, England, horizontal borers; Schultz, Mulhouse, shapers; Grafenstaden, lathes; Wanderer Works, Chemnitz, millers.

I am informed that there will soon be installed in this department an Armstrong tool of 220 tons weight, capable of swinging a length of 17.530 m. and a diameter of 2.300 m.

With the exception of a Pratt & Whitney lathe, practically all the lathes in the principal machine tool department are from either Ernault or Grafenstaden. The shops popularly referred to as Grafenstaden are a branch of the works known as Société Alsacienne de Constructions Mecaniques, Mulhouse. This firm was originally French—that is, until 1870. One branch of the establishment is located in Belfort, French territory, and although the parent house is now in Germany, I am inclined to think that many houses still look upon the Mulhouse shops as French.

In the locomotive department I did not observe any oxygen gas cutting appliances or presses for stamping out plates. All plate cutting was done by punching. Only plate frame form of construction on locomotives was in progress. The finish on these French locomotives is of high order.

A Well Equipped Plant.

In the armor plate department some beautiful tools from Ernst Schiess of Düsseldorf were observed. There were four in all, and they are as fine tools of the type as I have ever seen in any installation.

Le Creusot impresses one as being an extraordinarily fine plant. The steel made there is largely by the Martin process. Ore comes from the company's mines in Eastern France, from Algiers, and from Spain. The richest minerals come from the Pyrenees. While Le Creusot is almost in the east center of France, it is accessible by canal, both from the Mediterranean and from the English Channel. Torpedo boats and destroyers have been built at the Schneider works at Chalon-sur-Soane and conveyed thence to the Mediterranean.

As heretofore remarked, American machine tools are not much in evidence at Le Creusot, and it would seem that the question of price has cut some figure, for my attention has been called to the freight rates, commissions and duties imposed. This is a matter calling for some attention, as foreign made tools can often be undersold to advantage by American makes. The best single installation here is, I think, from Schiess. These are machines for armor plate work and probably constitute the same aggregation which an American firm negotiated for.

It is impossible to exaggerate the importance of Le Creusot, for this is certainly the most important plant of its kind in all France. The highest intelligence marks the direction of the various departments, and taken all in all the establishment is one of which Frenchmen are rightly proud. There is no work here in armor plate or castings of any kind too large for Le Creusot to handle, and from the standpoint of the gigantic the Creusot shops can produce sizes the equal of any other plant known to the writer in Europe.

Le Creusot is working on a 10-hr. schedule, commencing at 6.30 and continuing until 11.30, with a noon shutdown from that hour until 1 p.m., the day terminating at 6 p.m. The cost of wages is tending steadily upward, and living is not deemed cheap. Rentals, however, are cheap.

Rail mill No. 2, at the Lackawanna Steel Company's plant at West Seneca, N. Y., was started August 31, on double turn.

July Exports and Imports of Iron and Steel.

An increase in iron and steel exports is shown by the July report of the Bureau of Statistics of the Department of Commerce and Labor. The total value of these exports, not including ore, in July was $12,685,951, against $11,677,944 in June. Taking the commodities for which quantities are given, the total exports for July were 86,806 gross tons, against 69,778 tons in June, 64,020 tons in May, 93,522 tons in April, 96,437 tons in March, 81,755 tons in February and 74,352 tons in January. The following table gives details of the exports of such commodities for July and for the seven months ending with July, as compared with the corresponding periods of 1907:

Exports of Iron and Steel.

	July,		7 months ending July.	
	1908.	1907.	1908.	1907.
	Gross tons.	Gross tons.	Gross tons.	Gross tons.
Pig iron	2,624	6,405	23,069	48,035
Scrap	1,269	4,001	12,825	20,728
Bar iron	533	2,212	4,141	16,499
Wire rods	252	500	3,751	8,162
Steel bars	2,661	6,598	25,823	41,066
Billets, blooms, &c	8,465	3,486	72,150	54,269
Hoop, band, &c	135	1,344	2,614	3,865
Steel rails	28,203	37,705	111,179	180,720
Iron sheets and plates	4,491	4,078	23,885	22,099
Steel sheets and plates	4,908	6,398	32,510	55,537
Tin and terne plates	54	1,051	11,167	7,357
Structural iron and steel	10,657	11,941	71,501	76,928
Wire	5,870	13,825	77,510	89,727
*Barb wire	3,792	....	3,792	....
Cut nails	796	505	4,167	4,326
Wire nails	1,648	4,274	16,477	25,750
All other nails, including tacks	306	688	2,610	4,890
Pipes and fittings	10,112	17,238	67,547	82,914
Totals	86,806	122,249	566,718	742,872

* Not separately stated prior to July 1, 1908.

It will be observed that the figures for 1908 in the above table are much below those of corresponding periods in 1907.

The July imports of iron and steel show a small increase over those for June. The total value of such imports, not including ore, was $1,781,309, against $1,759,651 in June. Taking the commodities for which quantities are given, the July total was 18,320 gross tons, against 21,109 tons in June, 13,584 tons in May, 12,342 tons in April, 15,885 tons in March, 19,054 tons in February and 28,008 tons in January. The following table shows details of the imports of such commodities for July and for the seven months ending with July, as compared with the corresponding periods of 1907:

Imports of Iron and Steel.

	July,		7 months ending July.	
	1908.	1907.	1908.	1907.
	Gross tons.	Gross tons.	Gross tons.	Gross tons.
Pig iron	5,293	54,023	51,741	385,854
Scrap	844	4,504	3,002	16,700
Bar iron	1,397	3,744	13,344	22,933
Rails	203	893	1,010	2,613
Hoop, band, &c	2	2	290	1,315
Billets, bars and steel in forms n.e.s	690	1,297	5,647	9,089
Sheets and plates	236	366	1,136	2,591
Tin and terne plates	8,242	8,845	44,171	39,716
Wire rods	869	1,547	6,406	10,590
Structural iron and steel	544	229	1,383	1,832
Totals	18,320	75,450	128,130	493,233

The imports of iron ore in July were 44,035 gross tons, against 43,429 tons in June. The total iron ore imports for the seven months ending with July, 1908, were 377,833 gross tons, against 726,432 tons in the corresponding period of 1907.

The total value of all kinds of exports of iron and steel, not including ore, for the seven months ending with July, 1908, was $93,200,401, against $111,813,066 in the corresponding period of 1907. The total value of similar imports for the seven months ending with July, 1908, was $11,993,195, against $25,402,464 in the corresponding period of 1907.

THE IRON AGE

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The Iron Trade on a 60 Per Cent. Basis.

The evil results of the attempt to force prosperity by claiming it are not confined to the disappointment following failure to realize on the claims. Repeated disappointment might easily produce a state of the public mind in which really favorable developments would be denied full credit, and thus the natural and timely growth of confidence be retarded. Three quarters of the year have well nigh passed, and it is conceded that the sanguine predictions commonly made early in the year have not been fulfilled. Yet the fact that the gradations of improvement from week to week have been so fine that progress toward prosperity has been denied and affirmed simultaneously may on the whole be counted as favorable in itself. Confidence is normally a plant of slow growth.

In the steel trade the conditions in February of this year led to the following prognosis for 1908 by representatives of the leading interest: A gradual increase through the year from an output then representing about 45 per cent. of capacity to one representing about 75 per cent. of capacity, at the beginning of 1909. From the standpoint of September the forecast will perhaps stand some revision as to the time limit, but events have proved its correctness as to the fact of continued betterment, albeit it was made in the face of a political campaign, which early in the year promised features peculiarly disturbing. Seven months have gone by of the period covered by the prediction, and, using current statistics as a gauge, the iron trade may now be regarded as on a 60 per cent. basis. In other words, the half way point has been reached in the advance to the 75 per cent. goal. That the other half of the distance will be traversed at a faster rate is doubtless the popular view. Yet it must be said at the same time that while some of the uncertainties of the early months of the year have been removed—chiefly that relating to the crops—and while the country has refused to surrender itself to frenzied politics, the road to prosperity is far from being a straight and open one.

It was said above that a 60 per cent operation is now being carried on in iron and steel. The statement is based on the pig iron statistics for August, given on another page. In 1907, up to November, the output was practically up to the limit of the fit capacity throughout the country. Some additions have been made since, but the bulk of the new capacity that has been under way for many months is still unfinished, so that for the present purpose full capacity may be regarded as the same as that of one year ago. A noteworthy increase, for a year like 1908, was made in pig iron production last month over that of July—approximately 11 per cent. in coke and anthracite iron. The figures are as follows, comparison being made also with July in each year:

Coke and Anthracite Pig Iron Production, July and August, 1907 and 1908.—Gross Tons.

	1908.	1907.	1908, in percentage of 1907.
July production.....	1,218,129	2,255,660	54
August production.....	1,348,831	2,250,410	60

The steel companies' production of pig iron in August was 897,052 tons, or 62 per cent. of their production of 1,445,685 tons in August, 1907. Thus the merchant furnace production last month was slightly more than 56 per cent. of that for August, 1907. So far as foundry operations are concerned—and these take the bulk of the merchant furnace output—56 per cent. is quite above the rate of consumption generally credited to this branch of the industry in recent months. A little time may be required to demonstrate whether the recent increase in merchant furnace production is in response to a real increase in the consumption of merchant pig iron, or a reasonable expectation of such an increase in the near future.

Factory Training for Machinery Salesmen.

Throughout the machinery trade it is generally agreed that some knowledge of factory conditions and methods is essential to the broadest usefulness of a salesman. Just how this experience shall be acquired in order to be most profitable is a problem that in many branches of industrial work is in a somewhat unsettled status. It is clear that there should constantly be close relations between the district office engineering salesman and the designing engineer in the factory, but there is room in not a few cases for the introduction of better methods of insuring co-operation. It often happens that a salesman in the field will not visit the factory for months at a time, through the exigencies of trade conditions, and while the general progress of the designers will be outlined in bulletins and equipment letters, the absence of personal contact between the salesman and the designer tends to delay production when a customer needs special apparatus, and to prevent the best applications of the product to rapidly changing conditions of service.

If it is important for the experienced salesman to keep in close touch with the factory, it is a vital necessity for the new man in the selling field to acquire an acquaintance with the particular factory methods of his company in order to appreciate the limitations of production, and to avoid burdening the company with special work when standard products would answer the purpose. Without a detailed knowledge of the conditions at the factory, it is hard to forecast deliveries with any accuracy, and to avoid throwing complex and expensive work upon the staff at the plant when the demands of probable purchasers vary so widely. It might be supposed that a salesman handling a standard product like an engine lathe, for example, would find little need of factory training or frequent later co-operation with the designing engineers, but while thousands of lathes are sold each year to purchasers whose conditions are not made known, there is a constant endeavor on the part of the more progressive consumers to increase the rate of production in their establishments, either through the adoption of high speed tool steels or through the use of direct connected electric motors; or possibly through the demand for tools of multiple cutting facilities as in drills and planers, or by the

adoption of new and special features that call for redesigning in some part or other of the machine. It is in dealing with these special cases—and they arise far oftener than any one outside the selling field appreciates—that a keen appreciation of what is likely to be profitable at the factory end is helpful to the salesmen, and may readily be the means of securing orders that the less carefully trained selling force could not obtain. This is nowhere more true than in the electrical machinery field, where the conditions of the purchasers have developed along highly individual lines, complicated by many rapid advances in the design of apparatus.

In some cases it is impossible for a salesman to secure assignment in a district office unless he has been through a rigorous course in the factory of his company, starting at the bottom of the ladder at a few cents an hour, and working upward through the testing and drafting departments to the designing engineer's office, before going into the field as a commercial man. This policy lacks nothing in thoroughness, but it tends in some cases to keep out the man fitted for the sales office, through the lack of any operating or designing ability that would enable him to pass through the shop with noteworthy credit. Other companies will employ men of technical training in their sales offices, with a comparatively limited shop experience, specializing that experience to the end of successful salesmanship from the very start. Not every machinery salesman who is a first class worker in the commercial field is capable of doing good factory work, and neither is every brilliant factory engineer competent to go into the district office and make a success of the work there. With the increasing tendency to specialize in all branches of industrial work, there is less and less reason for including a long and arduous course in the shop in the preliminary training of the machinery salesman. To go the extreme of slighting the shop before appointment to the office staff is to invite disaster, but there is no doubt that the character of shop training that is now given to many engineering salesmen could be profitably altered in not a few cases, without in the slightest degree cutting down the selling efficiency of the outside staff. A general knowledge of the factory methods and equipment, the resources of the designing and drafting departments, close touch with testing results rather than actual manipulation, and wide personal acquaintance with the organization and with competing apparatus are the essentials of the best training for machinery salesmen.

American Steel Not Being "Dumped."

Comment has been made in Great Britain on that country's increasing imports of iron and steel, coupled with declining exports, and it is intimated that steel manufacturers in the United States and on the Continent are more actively pressing their product on outside markets, both in finished and semi-finished steel. The statistics of exports from the United States in recent months do not bear out this statement. Our exports of iron and steel in May were 64,020 gross tons against 91,541 tons in May, 1907. In June they were 69,778 tons, as compared with 92,996 tons in June, 1907, and in July of this year, 86,806 tons, against 122,249 tons. In semi-finished steel the export movement has been comparatively light—a total of 17,879 tons in May, June and July, against 14,541 tons in the same months of 1907. A slight gain is shown here, but nothing like what might have been expected, in view of the sale of 100,000 tons of sheet bars made by the Steel Corporation early in the present depression to a leading British manufacturer of sheets. The imports of billets, slabs, and sheet and tin plate bars by Great Britain in the first seven months of the year were 291,693 tons, while in the like period of last year they were 176,774 tons, an increase of 114,919 tons. The exports of semi-finished steel from the United States this year up to July 31 were 72,150 tons, an increase of but 17,881 tons over those of the first seven months of last year. This record accords with what is known of the holding up of shipments on the large contract with American steel works referred to above, and suggests that there may have been a renewal of German dumping in England on a liberal scale.

The Holding Back of Machine Tool Prices.

Under the workings of the system of exclusive territorial rights in the selling of machine tools through dealers, complaint is sometimes heard that price-lists are withheld from those houses whose early contact with the manufacturers is through the authorized agents. If a dealer has the agency for a certain tool, and another, perhaps located in a subordinate city in the territory, finds a prospective buyer, the latter dealer is unable to quote on the business until after he has communicated with the exclusive agent, telling the name of the customer and his requirements. Under any circumstances the order must be placed with the agent controlling the territory, and if another dealer secures it he must divide the commission, usually on a half and half basis. Prices are withheld largely because the agent wishes to be certain that the other dealer is not seeking business on which the former is working himself. If he is in the field for an order, he holds rightly that there is no reason why he should share the commission on it. As a consequence, the dealers who must depend upon the exclusive agencies of the larger centers, it is claimed, have less knowledge of the price-lists than the rival exclusive dealers between themselves.

While this relation in the trade may be necessary in preserving the integrity of territorial rights, still it occasionally works out unfortunately, and friction follows. The dealer who is outside of the agreement is sometimes compelled to seek prices by means of subterfuge, and once in a while one of them secures quite complete lists in this manner. At his request, friends among the buyers make fictitious inquiries for machinery, getting quotations which they promptly turn over to him. They have no intention of placing orders, and put the regular agents to unnecessary trouble and expense in sending representatives to work up the suggested new business, occupying time which would be better employed on genuine inquiries. The element of deceit is made conspicuous to a greater or less degree, and becomes a source of trouble.

The great harm lies in the lack of genuine co-operation between the exclusive agents and the dealers who must act through them, the latter constituting a class by no means inconspicuous in the trade. Naturally, they must always favor those machines that they can sell direct from the factory, receiving full commission, and they are stimulated to work actively against the tools that they cannot handle without a division of profits. This is the unavoidable business consequence of the system, and has no real remedy. But it may be modified after its operation has become better understood with the lapse of time. Those outside of it resent the arbitrary power of the agents. A few years ago it would have been impossible for any dealer to have demanded the name of a cus-

tomer before furnishing prices to another dealer. The presumption would have been laughed at.

Probably the holding back of lists from the class of dealers who may be called subagents will continue permanently as an essential part of the system, but there seems to be opportunity for concessions, individual circumstances to govern. If the exclusive agent is established in one city, he might with advantage to himself and the manufacturers whom he represents seek the active co-operation of a reliable dealer in another city of his territory, furnishing him with the lists. We believe this has been done already in a limited way. It must always be with the understanding that when the two are after the same business the subagent must step aside, leaving the field free to the agent. The former, learning from a dealer, to whom he applies for prices, that the business is already being followed up, would probably feel free to try for the order himself with machines of other makes, especially where no co-operation existed. But, on the other hand, should the subagent find business of which the agent is in ignorance, there would be some mutual advantage if he were in a position to quote quickly.

It is claimed that the delay incident to communicating with the agent may mean that a third dealer has stepped into an advantageous position from which he cannot be dislodged, and the business is lost. In any case, the commission shall always be divided if the subagent gets the order; if the agent himself books it there shall be no division. He must always receive half of the profit or the whole of it. The question is whether he would not have a larger total of business if the small dealers were to work actively with him, and whether, even if the profits on a part of the business were reduced by division of commissions, there would not be an important advantage in his dealings with the manufacturers whom he represents because of increased volume of orders. To accomplish this, he must furnish the dealer with price-lists, and perhaps sacrifice the knowledge he would otherwise gain of the existence of new business until it has been turned over to him in the form of orders. Perhaps, too, business may be lost because of the dealer's failure to demonstrate the machines with the same degree of skill as the experts. This is an important side of the question—that the exclusive agent has his own highly trained salesmen who may be better equipped to work up an order than the dealer who acts as a free lance in the trade, selling anything that a customer may want, untrammeled by the restrictions that surround those who carry exclusive lines. If the subagent is compelled to ask for prices with each succeeding opportunity to place business, and at the same time to give the name of the prospective customer, then the territorial agent is in a position to use his own judgment as to the best means of landing each individual order. He must give the other man some of the commission, but it may be a more certain source of profit to each of them.

Looking at the matter from still another viewpoint, every dealer successful enough to survive in the trade must have friends who will favor him and means of information through which he obtains a knowledge of intended purchases which gives him an advantage over his competitors. A dealer may specialize in textile machinery or paper machinery or shoe machinery or some other line outside of metal working, and at the same time carry machine tools as an accessory of his regular business. Such a man usually receives information in his trade which is much less likely to get to the ears of the dealer who handles machine tools exclusively. It is a well-known fact that in not a few lines of manufacturing outside of the metal trades the machine shop is a department important enough to be carefully watched for business, especially as the business sometimes comes when regular sources of orders are inactive.

In the second-hand machinery business a knowledge of current prices is occasionally a valuable asset and the lack of it a handicap in the disposal of machinery. The price of a used machine is usually based upon that of a new tool of the same make. If this is not known, it is a difficult matter to judge intelligently of the price to pay for a second-hand machine or the price to ask for it. The knowledge may be so valuable to the exclusive agents as to make it worth while to keep it to themselves, thus driving the smaller dealers to seek it from some roundabout source. Yet this is only one of the elements of the question. As we have stated, the rule, now comparatively new with many lines of machinery, will be modified as time goes on to meet individual cases among the dealers who are feeders for the territorial agencies.

Guarding Trade Secrets in England.

The British Government is now collecting statistics of its home manufactures for the year 1907, in order to secure a fuller knowledge of the volume and value of home trade. This census is being taken under a special act, which requires the Board of Trade "to have due regard to the circumstances of various trades and industries and in particular to the importance of avoiding the disclosure in any return of any trade secret, or of trading profits, or of any other information the disclosure of which would be likely to tend to the prejudice of the person making the returns." On this point United States Consul Albert Halstead, at Birmingham, reports as follows:

"The British manufacturer is generally averse to furnishing information in regard to his business, being apprehensive lest trade secrets may be discovered. This apprehension was one of the objections raised by manufacturers. The greatest care has been taken, however, to prevent the discovery by the public of trade secrets, and no particulars as to any individual establishment are to be disclosed. The law imposes a penalty of two years' imprisonment, with or without hard labor, or a fine, or both fine and imprisonment, upon any person who improperly discloses the information thus obtained. In order to more surely protect individual firms from the disclosure of their private business the first leaf of the schedule, which is the only one on which the name of the firm will appear, has been perforated, and as soon as the schedule is returned to the Board of Trade this leaf is to be detached by a responsible officer, and the other pages only, which contain no indication as to the source of information, will be dealt with by the clerk engaged in the work of compilation."

Negotiations which have been progressing for the past three or four months between development interests of Richmond, Ind., and the Rahn-Carpenter Company, Cincinnati, Ohio, have been concluded, and the latter company will remove its plant to the former city. The company has been making a series of engine lathes of medium size and up to 32-in. swing; also a line of gap and turret lathes. Arrangements under way contemplate an increase in the capacity of the plant, and the addition of larger sizes of lathes. The company is given 7 acres of land, a cash bonus and two buildings, 100 x 300 ft. and 80 x 300 ft. in size, but one of the principal factors which induced the change is the promise of much business from Indiana manufacturing establishments, of which several of importance are located in Richmond. Wm. H. Carpenter is president and treasurer, and John Rahn, Jr., is vice-president and secretary of the company.

The Verein Deutscher Ingenieure has subscribed 50,000 marks to the fund for Count Zeppelin.

Electrochemical Cleaning Baths.*

BY CHARLES H. PROCTOR, ARLINGTON, N. J.

In the electrodeposition of metals two conditions are absolutely necessary for successful results. The first is a chemically clean metallic surface; the second, the proper composition of the depositing bath. With these two preliminaries duly in order, the results can never be in doubt. To the methods of arriving at the former condition I desire to call your attention, and primarily to the cleansing of the metallic surface by the aid of the electric current. From the earliest introduction of the art of electroplating it has been the aim of the operator to produce a perfectly clean surface, realizing that to produce a perfect union of the deposited metal upon the baser metal this was an absolute necessity. In the days of the chemical battery, before the dynamo became the prime factor in the electrodeposition of metals on a commercial scale, the manner of cleansing the surface of the baser metal was practically the same in every case. According to the earlier textbooks on electroplating this was a somewhat costly operation. The methods then in vogue, if applied in these days of competition, would often exceed in cost the commercial value of the articles plated.

So much care was exercised in cleaning the metallic surface that such metals as copper, bronze and brass, after being highly polished, were afterward scoured by the aid of various substances, thereby producing a dull surface that was supposed to be a necessity, because the early operators were under the impression that the deposit would not stick to a polished surface. At the present time we know that it is just as easy to produce a successful deposit upon a polished surface as upon a surface that is unfinished. There is always one factor to be taken care of and that is oxidation. As oxygen is always present in the atmosphere, with its well-known affinity for most metals, it will oftentimes in a few moments form an oxide on the surface of the metal which is invisible to the eye and yet sufficient in some baths, like nickel, to prevent a true adhesion of the deposited metal.

This is the reason, no doubt, that the early operators obtained many unsuccessful deposits and deemed it necessary to scour the surface with pulverized bath brick, trent sand, pulverized pumice stone and many other abrasive substances. Within the past few years a number of substances of a chemical nature have appeared upon the market and have met with gratifying success, due to the fact that a chemically clean surface could be procured without oxidization or deterioration of the polished surface.

The First Use of Electricity.

Several years ago a surprise was introduced among the electrodepositors of metals, in the news that a well-known manufacturer was cleansing his goods made of iron and steel by electricity. It was announced that alkaline substances such as sodium carbonate, potassium carbonate, potassium hydroxide and sodium hydroxide in solution, in varying degrees of concentration and with small proportions of potassium cyanide added, with a sufficiently strong electric current of from four to eight volts and at temperature nearly boiling, would develop sufficient hydrogen to remove entirely all organic substances from the surface of the metal, thereby leaving it chemically clean. In October, 1905, the first article on the subject of electrochemical cleaning was published, and from that time the use of this method has been constantly increasing. To-day very few large concerns, especially among those engaged in the manufacture of hardware, are without electrochemical cleaning baths, which have proved so successful in the cleansing of many articles at a great saving of labor. This method has also brought into the market several new combinations which are sold under the name of electrochemical cleaning salts, and have given very satisfactory results.

The action of an electro-cleanser is similar to the action of an electroplating bath. The only difference as far as the development of gases is concerned, is that no metal being in solution and the anode being insoluble, no metal is deposited. But with a strong current a copious evolution of oxyhydrogen gas is developed from the articles, which attacks the organic matter upon the surface, practically lifting it off and by rapid evolution of the gases carries it to the surface. The small quantity of potassium cyanide contained in solution absorbs the slight oxidation that might be upon the surface, and by the combined action produces a surface clean enough, after washing in clear water, for any deposits.

Preparation of the Electric Bath.

The arrangement of an electrocleaning bath is very simple. Prepare a wrought iron tank of proportions best adapted to the amount of work to be cleansed. This should be heated with steam coils of iron. Across the top of the tank an insulated frame should be constructed, and upon this three conducting poles placed as on the regular plating bath. To the two outside poles the positive current should be carried direct. This can best be accomplished with at least ½-in. copper wire flexible cables. To the center pole the negative current is connected with cable of the same dimensions. No rheostats are necessary. The stronger the current the greater the evolution of gases and the quicker the cleansing operation is accomplished. Although direct contact can be made with the positive current to the tank itself, in practice better results have been obtained with anodes of sheet iron not more than 6 in. wide and of a length in proportion to the depth of the tank.

The electrocleaning solution should consist, for ordinary purposes, of 3 to 4 oz. caustic potash to each gallon of water, and to every 100 gal. of solution 8 oz. cyanide of potassium. This can be varied according to conditions. It is advisable to add at least ¼ lb. of cyanide each week. Where the articles, such as iron or steel, contain much oil or grease upon the surface, the density of the solution can be increased. For articles of brass, copper or bronze that have been polished, use a solution of carbonate of soda in the proportion of 2 oz. soda and ½ oz. caustic potash to each gallon of water, with the addition of 4 oz. of cyanide to every 100 gal. of solution. If much organic matter is upon the surface of the articles to be cleansed, it is advisable where an air pressure can be obtained from an ordinary blower, to arrange a pipe so that the current of air can be deflected upon the surface of the solution, thus keeping the center of the solution clear of the insoluble substance that arises to the surface. When the cleanser is at rest, as much of this matter should be removed as possible.

It should be the aim of the operator to use the same methods of avoiding all unnecessary contamination as he would in electrodepositing baths. It is obvious even to those who have not practiced this method of cleansing metallic articles that large quantities of work can be treated very rapidly, and this is the case especially where frames or racks are used in the plating operations. On account of the rapidity of operation and the efficiency of the bath, this method of cleansing should be a part of the labor saving devices used in all great commercial establishments engaged in the electroplating of metals.

* A paper read at the Toronto convention of the American Brass Founders' Association, June, 1908.

The Gates Rock and Ore Breaker.—Although the style K gyratory breaker described in Allis-Chalmers Company's bulletin No. 1416 is a new machine from the spider to the base, the fundamental principle of gyratory breaking remains. The gyratory breaker has overcome many objections to the jaw crusher. It has a larger capacity, crushes finer, and requires less power to operate. There are no severe shocks, and the cost of breaking and wear due to them is eliminated. From the time of the first application of the gyratory principle to rock breaking, Gates gyratory rock breakers have been built by the Allis-Chalmers Company or the Gates Works, which it absorbed, and the development of machines to meet growing needs has never lagged. There are now more than 6000 Gates crushers in use in all parts of the world. That they are giving satisfaction is evidenced by the constant receipt of new orders from old customers who are increasing the capacity of their plants.

The Massachusetts Anti-Stock-Watering Law.

From an article by Grosvenor Calkins, in the *Quarterly Journal of Economics*, we take the following statement regarding corporate legislation in Massachusetts:

One of the most important acts of the Massachusetts Legislature of 1908 is an amendment to the law affecting conditions under which certain classes of public service corporations may issue increased shares of stock. The anti-stock-watering laws of Massachusetts have successfully withstood the pressure of commercial expansion and industrial development for 15 years. The test of declining values and hard times has been reserved until now. The Legislature has finally yielded, in part, to the demands for greater elasticity in issue of increased capital.

Before 1871 issues of increased capital were to be made at par value. In 1871 railroads were required to offer all stock worth more than par at auction; and this was soon extended to street railroads. In 1878 the law was re-established as before 1871, and no substantial change was made for 15 years. Under this law of 1878, stockholders' subscriptions were limited to par value of the stock; the only way in which stock could be sold at a premium was by public sale.

The Act of 1893.

In 1893 a radical change was made. Instead of requiring increased capital, if offered for subscription of stockholders, to be sold at par and no other price, no increased capital could be issued, in excess of 4 per cent. of existing capital, without first being offered to stockholders "at market value thereof at the time of increase," to be determined by the railroad commission. The directors were required to sell at public auction any shares not subscribed for, and in no case could stocks be sold at less than par. At first this act applied only to transportation companies, but in 1904 was extended to include all public service corporations.

The railroad commission early adopted the policy of fixing a subscription price based on market quotations, somewhat lower than current quotations of listed stock, but with only sufficient margin to make sale of a substantial block at ruling quotations reasonably secure. This policy the commission for 15 years steadily maintained.

Since the law of 1893, steam roads have increased capital three times by issues exceeding 4 per cent. of existing capital, as follows: In 1899, by Norwich & Worcester, at 215: in 1901, by Boston & Maine, at 190; and in 1906, by Boston & Maine, at 165. All the above were fully subscribed by stockholders except the 1906 issue of Boston & Maine. Steam roads also increased capital 15 times by issues of less than 4 per cent., increased stock being sold at auction with large premiums. Street railroads applied 207 times for increases, of which 153 were authorized at par and 54 at a premium.

The Investors' Attitude Changes.

Until recent years few complaints have been made by corporations or stockholders. Handsome premiums have been obtained from stockholders, issues have been fully subscribed, and "rights" have found a ready and profitable market. But of late stockholders have subscribed to new stock only to find a declining market has turned the privilege into an unprofitable investment. The last issues of Massachusetts railroads were only partly subscribed for, and it was realized that some change must be effected before the experiment could successfully be tried again.

The greatest pressure has been brought to bear on this year's Legislature to secure legislation which would shift the responsibility of fixing the terms for increased capital from the railroad commission to the corporation. In its original form the bill introduced for this purpose applied to all public service corporations. It proposed to permit them to offer increased stock to stockholders at such price, not less than par, as might be determined by the directors. The only duty of the railroad commission was to determine whether the amount of the proposed issue was reasonably necessary.

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The experience of Massachusetts during the past 38 years in dealing with the perplexing problem of how to regulate issues of increased stock by public service corporations may be summarized by reviewing in chronological order the four plans adopted:

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2. All increased stock shall be sold at auction. This is the generally accepted method of determining intrinsic value under any conditions. It certainly will protect the public, but is not always in the interest of the corporation or stockholders. Traditionally, and usually legally, stockholders are entitled to the first opportunity to secure increased stock on terms at least as favorable as the investing public will offer. Under such circumstances it may be for their interest to accept less favorable terms, although recent experience of Massachusetts corporations does not indicate this is generally appreciated. Finally, sales of large blocks at auction may afford an opportunity to interests hostile to the corporation to secure a substantial voice.

3. Increased stock shall be offered to stockholders only at actual market value. This will safeguard the public interest, but will be an effective method of securing additional capital in substantial amounts only under favorable financial conditions.

4. Increased stock shall be offered for subscription at a price not less than par, to be determined by stockholders subject to approval of the Railroad Commission. This should be satisfactory to stockholders and to the corporation. Unless controlled by their own good sense or by the supervision of the Railroad Commission, however, this plan will offer the temptation to stockholders at periods of corporate prosperity to issue to themselves stock on substantially more favorable terms than conditions existing require. Should this practice become general, the public interest will require all issues of increased stock to be advertised and sold at public auction, and not otherwise.

The Aluminum Company of America, formerly the Pittsburgh Reduction Company, has filed with the Massachusetts Secretary of State a statement of its financial condition, dated December 31, 1907, as follows:

Assets.

Real estate	$758,493
Machinery, construction and equipment	7,015,182
Merchandise	572,673
Manufacturers' stock in process	548,118
Cash and debts receivable	2,574,102
Patent rights	177,000
Good will investments	1,545,000
Total	$13,190,568

Liabilities.

Capital stock	$3,800,000
Accounts, bills payable	2,892,749
Profit and loss	6,497,819
Total	$13,190,568

The Cherokee Pipe Line Company, Chelsea, Okla., has been incorporated with a capital stock of $30,000, to lay a line from the shallow sand oil field to Chelsea, and to ship crude oil to a refinery which is being built at Texas City, Texas. The company expects to handle about 2000 barrels of crude oil daily, and will lay about 10 miles of 4-in. pipe and about the same length in 2-in. laterals through the field. Wm. Copp is president; W. D. Todd, vice-president; W. H. Hammett, treasurer and general manager, and F. M. Scott, secretary.

The La Belle Iron Works Report.

The annual meeting of the La Belle Iron Works, Steubenville, Ohio, was held on Tuesday, September 8, at which the following financial statements were submitted for the fiscal year ending June 30, 1908:

INCOME ACCOUNT.

Net earnings from operations and sale of oil		$1,814,771.31
Less provision for exhaustion of minerals, extinguishment of lease values, development, &c.		59,132.15
Net profits for the year		$1,755,639.16
Deduct:		
Interest on bonds	$147,000.00	
Cash dividend at $8 per share	594,928.00	
		741,928.00
Surplus for the year		$1,013,711.16
Surplus at July 1, 1907		3,150,809.99
Total		$4,164,521.15
Deduct:		
Stock dividend at 33⅓ per cent., declared but unpaid June 30, 1908	$2,478,866.67	
Appropriation for depreciation	250,000.00	
		2,728,866.67
Net surplus carried to balance sheet		$1,435,654.48

CONSOLIDATED BALANCE SHEET.

Assets.

Real estate, plant, &c., at Steubenville and Wheeling		$9,275,708.19
Mining and gas and oil properties		1,754,430.08
Other assets		45,000.00
Total capital assets		$11,075,138.27
Inventories of manufactured product, materials and supplies at cost	$2,990,397.57	
Accounts and bills receivable	845,951.80	
Cash	736,867.89	
Total current assets		4,573,217.26
Unexpired insurance, &c		6,196.89
Total		$15,654,552.42

Liabilities.

Capital stock issued—74,366 shares		$7,436,600.00
First mortgage 6 per cent. bonds:		
Total issued	$2,500,000.00	
Less in treasury	50,000.00	
		2,450,000.00
Capital stock dividend of 33⅓ per cent., declared but not paid June 30, 1908		2,478,866.67
Total capital liabilities		$12,365,466.67
Reserves:		
For general depreciation	$750,000.00	
For exhaustion of minerals	179,450.07	
For relining furnaces, extraordinary repairs, &c.	228,594.88	
		1,158,044.95
Accounts payable	$350,655.93	
Wages, taxes and royalties accrued	173,113.39	
Bond interest accrued and coupons not presented for payment	22,885.00	
Cash dividend on capital stock	148,732.00	
Total current liabilities		695,386.32
Surplus at June 30, 1908		1,435,654.48
Total		$15,654,552.42

From the accompanying report of President Isaac M. Scott the following statements are taken:

Minerals.

Your La Belle and Miller ore properties were operated almost continuously throughout the year with satisfactory results, both as to tonnage and quality of product. The Wacootah mine was put on a producing basis last year for the first, operations being carried on, however, to an extent sufficient to demonstrate the fact that this property can be operated very economically and that the quality of the ore is well suited to the requirements of your blast furnaces. The production of the three properties for the fiscal year was as follows, being an increase in tonnage over last year of 33 1-3 per cent.:

	Tons.
La Belle mine	52,866
Miller mine	237,501
Wacootah mine	156,302
Total	446,669

Your coke property in Fayette County was operated in full up to November 1; but since then, owing to the low price at which coke could be purchased in the open market and the clearly apparent advantages accruing to the company by conserving its natural resources where possible, it was not deemed advisable to operate a greater part of the plant than was necessary to hold the works' organization together. The coke production for the year was 63,433 tons, or a decrease of 29 7-10 per cent., compared with the previous year.

Your Steubenville mine produced during the year 126,251 tons of steam and heating furnace coal, an increase of 17 8-10 per cent. over the year before. The continued and increasing advantages to the company from having an almost inexhaustible supply of coal located so near the point of consumption is emphasized more and more as time goes on.

Manufacturing Plants.

Your manufacturing plants were operated during the first four months of the fiscal year to their full capacity, producing a greater tonnage than in any similar period in the company's history; but during the succeeding eight months, owing to the business depression, operations were carried on on a basis of from 33 1-3 per cent. to 60 per cent. only, the production for the year and a comparison with the previous year being as follows:

	Gross tons.	Decrease, per cent.
Pig iron	173,324	22.2
Slabs and billets	189,392	34.4
Plates and skelp	146,106	35
Sheets	11,551	(New product.)
Tubular goods	43,708	25
	Kegs.	
Nails	117,555	20.8

During the year there was paid out in salaries and wages $2,208,063.12, the average number of employees being 2993. This includes ore mines in Minnesota and coke works in Pennsylvania.

The value of the shipments for the year aggregated $8,910,712.32, a decrease of 28 5-10 per cent.

Plant Additions.

During the fiscal year the sheet and plate mills referred to in last year's statement as being in course of construction have been completed and put in operation. This addition consists of one 72-in. three-high plate mill, two jobbing mills and eight light sheet mills, together with galvanizing and roofing departments.

Owing to lack of business, it has not been possible as yet to fairly demonstrate what the new department will do in the way of tonnage and earnings, but with the return of normal conditions this branch of the business should and doubtless will show satisfactory returns.

Oil Property.

Since the last annual statement was presented your company acquired title to a tract of land of 175 acres, lying across the river from and a little south of the Steubenville Works. In making tests for gas on this property oil was discovered in paying quantities, and up to the end of the fiscal year there had been put down 12 wells, of which 11 were producers, the total production from December 12 last, the date of the drilling in of the first well, to June 30, being 95,343 barrels. Since June 30 to date there have been drilled in 11 additional wells, all of which are good producers. From present indications the property should show a still further increase in production, insuring to the company a steady income of substantial proportions for some time to come.

Funds.

Consistent with the board's action of the last two years, an addition of $250,000 has been made to the general depreciation fund, increasing that fund to $750,000. As will be noted by the reading of the report, additions have also been made to the relining, rebuilding, and contingent funds, and it is the opinion of your management that the amounts appropriated to these funds during the year have been liberal and quite sufficient to care for any contingency of an ordinary character that will likely arise.

In addition to the regular 8 per cent. cash dividend paid throughout the year, your Board of Directors, believing that conditions warranted it, authorized a stock dividend of 33 1-3 per cent. (covering which certificates were issued during the month of August), thus increasing the company's outstanding capital liabilities from 74,366 shares of $100 each to 99,155 shares.

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In addition to the regular 8 per cent. cash dividend paid throughout the year, your Board of Directors, believing that conditions warranted it, authorized a stock dividend of 33 1-3 per cent. (covering which certificates were issued during the month of August), thus increasing the company's outstanding capital liabilities from 74,366 shares of $100 each to 99,155 shares.

General.

In common with the other business interests of the country your company suffered severely in the way of decreased earnings during the last fiscal year through the depression brought about by the October panic. In order that the effects of this interference may be in a manner measured, it would be well to divide the fiscal year into three equal periods of four months each and explain that from July to October inclusive your manufacturing plants were operated on a basis of 100 per cent., November to February inclusive approximately 40 per cent., and March to June inclusive 55 per cent., June being on a basis of 60 per cent, as against a little over 50 per cent. in March.

Owing to the stability of prices in general, largely due to the intelligent manner in which the unusual situation growing out of the panic was handled, profits have been more favorable than would have been the case had those interested, when it was discovered that there was not sufficient business to go around, resorted to the old-time "cut throat" policy and undertaken to have secured business from their competitors by the process of underbidding. As an evidence of the correctness of this reasoning, it might be cited that the falling off in the company's profits, as compared with the last fiscal year, is in exactly the same proportion as the falling off in the value of the shipments. Almost invariably in times past, a slackening in business brought lower prices and a decrease in profits not in the same ratio as the loss in business, but by an increasing ratio.

It is gratifying to be able to report that notwithstanding the decrease in the volume of business and the natural tendency on the part of costs to increase under such conditions, our costs for the last few months have been on a very reasonable basis. This condition has been brought about by a general retrenchment all along the line, a more willing disposition on the part of our workmen to render a fair day's work and a decreased cost of certain commodities of which we are buyers, such as coke, scrap and the like.

Another gratifying feature of the year's business was the small amount of losses incurred from bad debts, as notwithstanding the fact that the panic and resultant depression was as severe as any other this generation has experienced, the amount of losses to the company through failure of customers to settle has been infinitesimal. The fact that there were few important failures in the steel and kindred lines throughout the country was undoubtedly due to the good judgment and patience universally exercised by the creditor in making collections during the few months directly following the panic.

While it is impossible to foretell what the future has in store for us, it would appear that with the abundance of money, good crop situation and the absolute necessity on the part of the railroads to purchase extensively in the near future, the coming year should be a prosperous one.

Your company, as the statement clearly shows, is in a sound financial position; your ore and coal properties are in a high state of development, and your manufacturing plants are capable of producing a larger tonnage of a more profitable line of goods than ever before, and it only requires business to again resume normal proportions to enable your company to show larger earnings than at any time in its past history.

The McWane Pipe Interests.

The September *Monthly Pipe Parley*, issued by the McWane Pipe Works, 220 Broadway, New York, with foundries at Lynchburg and Radford, Va., calls attention to the fact that on September 14 the McWane clan will celebrate the golden wedding of the senior member, who was a foundryman before the war. Four generations will be represented, comprising 63 in all. Every male member of the family over school age is in the pipe business. Following is a sketch of the elder McWane and a brief history of the business which he founded:

Charles P. McWane was born in 1833 at Massie's Mills, Nelson County, Va., of Scotch-Irish parentage. His father was a millwright and skilled mechanic, a close neighbor and personal friend of Cyrus H. McCormick, of reaper fame, and assisted largely in perfecting the first practical harvesting machine. He was married September 14, 1858, to Miss Eliza Dudley. Nine children were the result of this union, five boys and four girls, all of whom are living, and eight of whom are married. Shortly after his marriage he started a small foundry business at Wytheville, Va., the foundations for which were a cupola, or melting furnace, made from an old locomotive boiler, and a hand-made blower, operated by a horsepower, also hand-made.

The eldest son, Henry E., was closely associated with his father from boyhood in the operation and management of this business, working as a molder by day and attending to the bookkeeping at night. In 1887 Henry went to Lynchburg, Va., as manager of the Glamorgan Company. Two years later he began the manufacture of cast iron pipe, changing the name of the company to the Glamorgan Pipe & Foundry Company, of which he became the president and general manager, and which position he held for 13 years. During these years the force of workmen was increased from 16 to more than 700, and the annual volume of business from $50,000 in 1887 to $725,000 in 1901. In the meantime, his father's business, in which he still retained his interest, continued to grow, being reinforced in turn by each of the other sons as they grew up and served their apprenticeship in the shop.

In 1902 Henry sold his interests in the Glamorgan Pipe & Foundry Company, and purchased the entire stock in his father's business not already held by himself and other members of the family, this business having been incorporated several years previously under the name of the Lynchburg Plow Company to continue and manage the plow manufacturing business originally founded at Wytheville. The capital stock was increased to $150,000, a small pipe pit was installed, and the manufacture of pipe begun in April, 1903, with a daily output of about 15 tons. The corporate name was changed to the Lynchburg Foundry Company, but to distinguish the two lines of manufacture, the pipe department is operated under the name of the McWane Pipe Works, and the plow department under that of the Lynchburg Plow Works. During 1903 the daily output of pipe was increased to about 25 tons, and in 1904 the capital stock was increased to $250,000, and another pit was added, bringing the daily output to between 50 and 60 tons.

The continued growth of the plow department and the limited room for further enlargement of the pipe plant at Lynchburg, made the immediate acquisition of another plant necessary to meet the rapid increase in trade. In 1905 the Radford, Va., Pipe Works was purchased, but was not put in operation until July, 1906, it being under lease to another company. This plant cost nearly $500,000 to construct, and has a maximum capacity of 150 tons daily, in sizes from 3 to 30 in. diameter. The purchase of this plant necessitated a further increase in the capital stock to $400,000, which is the present limit, and which is controlled by the McWane family. Of the five sons, three are now actively connected with the business, as follows: Henry E., president and general manager, and principal stockholder; Charles W., superintendent of the plow pattern department at Lynchburg; Robert C., sales manager at the Eastern office, New York city. Of the other two sons, James R. is president and general manager and a large stockholder in the American Cast Iron Pipe Company, Birmingham, Ala.; and the youngest, Arthur T., is now in college. The father retired from active participation in the business some years ago, and is living at Radford, Va. In addition to the sons, there are two grandsons, both sons of Henry E., occupying important positions with the company, the eldest, Lawrence H., being resident manager of the Radford plant, and John R., assistant to his father at Lynchburg.

For the first time in nearly a year all three blast furnaces of the Buffalo Union Furnace Company, Buffalo, N. Y., are in operation, and arrangements are now being made for receiving and storing a great quantity of ore.

Pig Iron Production.

August Increase More Marked.

A Gain of 11 Per Cent. Over July, and More at Steel Works Furnaces.

The August pig iron output showed about the same increase over that for July as was shown in July over the total for June. The total of coke and anthracite iron last month was 1,348,831 tons, as compared with 1,218,129 tons in July, a gain of over 11 per cent. The number of furnaces active on September 1 was 179, a net gain of 18 (of which 11 were at steel works), while in the two months of the second half of the year the gain was 28. The weekly coke and anthracite furnace capacity active September 1 was 313,112 tons, which compares with 284,590 tons on August 1. The daily rate of production, as given in the following table, shows the largest gain in August for any month of the year. For steel works furnaces the daily average was 28,952 tons, a gain of 12.4 per cent. over July. Merchant furnaces produced 14,559 tons a day last month, a gain of 7.7 per cent. over July:

Daily Rate of Production.—Gross Tons.

	Steel works.	Merchant.	Total.
January	21,432	12,286	33,718
February	25,717	11,446	37,163
March	27,145	12,474	39,619
April	24,185	14,104	38,289
May	24,505	13,098	37,603
June	23,923	12,521	36,444
July	25,762	13,525	39,287
August	28,952	14,559	43,511

Capacity in Blast September 1 and August 1.

In the following table is given the weekly capacity of coke and anthracite furnaces in blast September 1 and August 1, based largely on their performance in the preceding month in each case:

Coke and Anthracite Furnaces in Blast.

Location of furnaces.	Total number of stacks.	September 1. Number in blast.	September 1. Capacity per week.	August 1. Number in blast.	August 1. Capacity per week.
New York:					
Buffalo	14	9	18,209	6	13,076
Other New York	7	3	3,510	2	1,942
New Jersey	8	2	3,808	2	3,358
Spiegel	2	0	0	0	0
Pennsylvania:					
Lehigh Valley	25	8	8,628	6	6,328
Spiegel	3	1	138	1	135
Schuylkill Valley	15	4	5,551	4	5,670
Low. Susquehanna	7	2	3,278	2	3,367
Spiegel	1	0	0	0	0
Lebanon Valley	10	3	2,058	3	2,242
Pittsburgh Dist.	45	31	81,762	28	72,860
Spiegel	3	2	1,556	2	2,150
Shenango Valley	20	11	21,527	9	19,588
Western Penn.	27	11	16,524	10	14,371
Maryland	4	2	3,617	2	3,811
Wheeling Dist.	14	3	5,502	3	4,676
Ohio:					
Mahoning Valley	18	9	23,261	9	22,162
Central and North. and Michigan	22	12	28,110	11	25,887
Hocking Val., Hanging Rock and S. W. Ohio	13	7	5,232	6	4,154
Illinois and Indiana	24	15	33,215	14	32,431
Spiegel	2	1	1,678	1	709
Minnesota	1	0	0	0	0
Wisconsin	6	1	1,502	2	2,490
Missouri	1	1	812	1	882
Colorado	6	2	3,854	2	3,802
The South:					
Virginia	23	10	6,995	9	6,347
Kentucky	5	0	0	0	0
Alabama	46	21	27,738	19	27,524
Tennessee	18	8	5,047	6	4,196
Georgia and Texas	3	0	0	1	434
Totals	393	179	313,112	161	284,590

Among furnaces blown in in August were Buffalo A and two Lackawanna at Buffalo, Genesee in New York, two Bethlehem in the Lehigh Valley, one Edgar Thomson, one Lucy and one Eliza in the Pittsburgh district, Alice and Hall in the Shenango Valley, Josephine and Emporium in Western Pennsylvania, West End in Virginia, one Central in Northern Ohio, Miami (new) in Southwestern Ohio, one South Chicago, one Clifton and Philadelphia (September 1) in Alabama, Embree and Cumberland in Tennessee and Rome in Georgia (blown out later and out September 1).

The furnaces blown out include Adrian in Western Pennsylvania, one Mayville in Wisconsin and Sam Lanham in Texas.

August Product by Districts.

The table below gives the production of coke and anthracite furnaces in August and the four months preceding:

Monthly Pig Iron Production.—Gross Tons.

	April. (30 days)	May. (31 days)	June. (30 days)	July. (31 days)	August. (31 days)
New York	62,263	64,746	61,249	66,498	83,004
New Jersey	22,701	20,889	15,963	14,830	16,866
Lehigh Valley	28,919	28,712	26,357	28,028	36,701
Schuylkill Val.	28,654	25,566	23,814	25,115	24,586
Lower Susquehanna and Lebanon Val.	28,315	29,943	31,058	26,204	23,632
Pittsburgh Dis.	276,883	284,571	259,771	303,645	362,417
Shenango Val.	71,970	53,720	58,244	82,978	91,534
West. Penn.	54,570	54,185	59,521	63,433	73,207
Md., Va. and Kentucky	48,955	49,273	46,802	46,635	47,492
Wheeling Dis.	17,930	18,121	16,539	19,405	24,368
Mahoning Val.	94,780	99,788	89,238	93,635	103,021
Central and North Ohio	88,047	88,995	70,283	92,737	117,016
Hocking Valley, Hanging Rock and S.W.Ohio	18,772	21,259	20,342	20,187	19,909
Mich.,Minn.,Mo., Wis., Colo.	36,808	36,831	34,363	40,029	35,542
Chicago Dis.	157,633	165,291	153,162	152,981	145,537
Alabama	94,754	104,697	110,196	123,301	122,840
Tennessee, Georgia and Texas	17,648	19,101	15,229	18,488	21,159
Totals	1,149,602	1,165,688	1,092,131	1,218,129	1,348,831

Production of Steel Companies.

Returns from all the plants of the United States Steel Corporation, the Cambria, Pennsylvania, Maryland, Lackawanna, Wheeling, Republic, Youngstown Sheet & Tube Company, Jones & Laughlin, La Belle, Bethlehem, Calumet, Inland, Colorado and Tennessee (Ensley) companies show the following totals of product month by month. We give separately a statement of the output of spiegeleisen and ferromanganese, which is included for each month in the total production:

Production of Steel Companies.—Gross Tons.

	Pig.—Total production. 1906.	1907.	1908.	Spiegeleisen and ferromanganese. 1907.	1908.
January	1,358,015	1,406,397	664,415	21,477	20,254
February	1,226,760	1,317,923	745,802	19,444	9,402
March	1,400,395	1,424,827	841,502	31,091	13,750
April	1,333,591	1,446,788	725,548	26,527	12,363
May	1,372,423	1,470,080	759,674	28,822	17,823
June	1,293,437	1,457,230	717,689	30,942	15,958
July	1,323,391	1,452,557	798,639	25,343	10,250
August	1,237,485	1,445,685	897,052	23,696	14,932
September	1,264,380	1,417,153	.....	30,270	.....
October	1,452,200	1,514,521	.....	35,105	.....
November	1,411,350	1,084,114	.....	21,861	.....
December	1,445,528	659,459	.....	19,480	.....

A Record of Active Capacity.

The active weekly capacity in coke and anthracite iron has shown the following fluctuations since January 1, 1904:

	Capacity per week.		Capacity per week.
September 1, 1908	313,112	April 1	484,240
August 1	284,590	March 1	479,737
July 1	264,452	February 1	482,156
June 1	259,284	January 1, 1906	463,673
May 1	268,674	December 1, 1905	475,814
April 1	264,890	November 1	460,449
March 1	267,437	October 1	445,468
February 1	241,925	September 1	412,563
January 1, 1908	232,652	August 1	410,088
December 1, 1907	347,372	July 1	408,617
November 1	491,436	June 1	443,092
October 1	511,397	May 1	452,031
September 1	507,768	April 1	439,564
August 1	513,471	March 1	403,157
July 1	528,170	February 1	405,792
June 1	523,220	January 1, 1905	377,879
May 1	524,538	December 1, 1904	357,846
April 1	496,456	November 1	334,249
March 1	511,035	October 1	319,249
February 1	492,359	September 1	291,573
January 1, 1907	507,397	August 1	246,092
December 1, 1906	513,860	July 1	272,301
November 1	500,580	June 1	336,107
October 1	469,665	May 1	368,244
September 1	441,426	April 1	337,257
August 1	449,908	March 1	308,751
July 1	460,570	February 1	273,692
June 1	472,622	January 1, 1904	185,636
May 1	484,031		

Samuel W. Hays Sons, Farmers' Bank Building, Pittsburgh, sales agents for the Whiting Foundry Equipment Company, Harvey, Ill., have received an order from the National Tube Company for six large electric jib cranes, to be installed in its new open hearth plant at Lorain, Ohio. The Whiting Company has supplied a very large number of this type of cranes, including 24 for the new plant of the Indiana Steel Company, Gary, Ind.; 18 for the Duquesne Steel Works, of the Carnegie Steel Company, and 12 for the Ohio Works of the same company.

NEWS OF THE WORKS.

Iron and Steel.

No. 3 furnace of the Republic Iron & Steel Company, at Thomas, Ala., has been put in blast. No. 1 stack at the same plant is to be blown out for relining.

Rome Furnace, at Rome, Ga., which was blown in on August 3, was operated only part of the month. A new bosh is now being put in and the furnace will start again about September 20.

The Lackawanna Steel Company, Buffalo, N. Y., had four furnaces in blast September 1, No. 2 having been blown in on August 23 and No. 4 on August 17.

Genesee Furnace, at Charlotte, N. Y., was blown in August 5.

The Bethlehem Steel Company had four furnaces in blast September 1, Furnace A having been blown in on August 3 and Furnace C on August 11. One furnace is now under construction, to replace the fifth of the group, which was dismantled some months ago.

The Republic Iron and Steel Company's Hall Furnace, at Sharon, Pa., was blown in on August 17.

The stack of the Adrian Furnace Company, Du Bois, Pa., was blown out on August 28.

All three Central furnaces of the American Steel & Wire Company at Cleveland, Ohio, were in operation September 1, one having been blown in in August.

South Works Furnace No. 2 of the Illinois Steel Company, South Chicago, Ill., was blown in August 21.

The Northwestern Iron Company had one of its Mayville, Wis., furnaces in blast September 1, the other having been blown out in August.

The furnace of the Embree Iron Company, Embreeville, Tenn., was blown in August 6.

Sam Lanham Furnace, Rusk, Texas, was blown out August 4.

The furnace of the Warner Iron Company, at Cumberland Furnace P. O., Tenn., was blown in early in August.

General Machinery.

A number of well-known business men of Plattsburgh, N. Y., have become interested in the invention of L. J. Aldridge of Plattsburgh and have incorporated the Aldridge Roller Bearing Mfg. Company, with a capital stock of $200,000. The company will build a plant for the manufacture of a special type of roller bearing axle. The axle contains 11 small rollers of hardened steel which revolve as the axle turns. Five of these rollers are constantly bearing on the axle, and are all so arranged that they can be easily removed when necessary and replaced with new rollers. These axles will be used for trucks, wagons, buggies and other vehicles, and will later be adapted to the uses of heavier rolling stock.

The Delaware & Hudson Company, C. S. Sims, general manager, Albany, N. Y., has completed the purchase of 150 acres of land in the town of Colonie, near the Watervliet Arsenal, and is having plans prepared for the erection of an extensive repair shop.

The H. W. Graber Machinery Company, Dallas, Texas, has increased its capital stock from $10,000 to $45,000.

The Department of Parks, New York, will receive bids until September 17 for seven electric motors and electric cables for the American Museum of Natural History.

Bridges and Buildings.

William W. Beers, formerly connected with the Eastern Construction Company, Brooklyn, N. Y., has opened an office at 719 Nostrand avenue, Brooklyn, and is now in a position to estimate on the erection of structural steel work for buildings, bridges, viaducts, ornamental ironwork, &c.

At a meeting of the stockholders of the Syracuse Bridge Company, Syracuse, N. Y., August 29, it was decided to materially increase the facilities for handling structural steel orders. The present plant at Grape and Taylor streets is to be vacated and a much larger plant is to be erected on a new site, not yet secured. The company also proposes to erect a branch plant at some point in New Jersey, adjacent to New York. Plans will be prepared and construction of the buildings will probably be started in the early spring of 1908. The new plants will be equipped with modern equipment to facilitate easy handling of its product. The following officers for the coming year were also elected: President and treasurer, Arlington H. Mallery; secretary, A. M. Malory.

Power Plant Equipment.

Bids will be received until September 17, at the office of Williams & Williams, Pittsfield, Ill., for a 57,000-gal. centrifugal pumping plant, to be located on the Illinois River, about 3 miles below Meredosia, Ill.

The Board of Trustees of Shortsville, N. Y., will receive bids until September 22 for a complete water works system, to consist of duplicate pumping plant, with triplex pumps and gasoline or electric power, elevated tank, cast iron pipe, &c.

J. J. O'Leary, electrical engineer, 62 Niagara street, Buffalo, N. Y., has been jointly retained by the Common Council of the city of Buffalo and the Board of Supervisors of Erie County to prepare plans and specifications for installing a private electric generating plant in the City and County Building. It has not definitely been determined as to whether the installation will be gas engine or steam engine driven units. Units will be direct connected and about 75 or 100 kw. each.

William C. Whitner, Richmond, Va., hydraulic engineer of the Virginia Passenger & Power Company and president of the Fredericksburg Power Company, has completed arrangements for the construction of a dam across the Rapahannock River, about 2 miles above Fredericksburg, where it is expected that 8000 hp. can be developed.

To complete the replacement of its single phase generative equipment, the Electric Light Company, Huron, S. D., is planning to purchase an additional 100-kw. three-phase 60-cycle machine. The manager of the plant is E. I. Bowe.

To meet the increased requirements of the municipal electric light plant at Townsend, Mont., it is proposed to install a new single phase 2200-volt 60-cycle generator of 70 to 75 kw. capacity, with excitor. This unit will be required before October 1.

Contracts were awarded August 25 for the municipal plant of Clarksdale, Miss., to the Weber Company, Memphis, Tenn., for concrete steel chimney; Ball Engine Company, Erie, Pa., 540 hp. engine, and to Crocker-Wheeler Company, Ampere, N. J., for 360 kw. direct connected generator. The contracts for covered reservoir, steam piping and repairs to the building have not yet been awarded. Walter G. Kirkpatrick, Jackson, Miss., is engineer.

A committee, of which the Mayor is chairman, has been appointed by the city of Warsaw, Ill., to consider the construction of a water works system to cost about $10,000. The committee has appointed Geo. C. Morgan, 169 Jackson boulevard, Chicago, as engineer in charge. A. H. Worthen is city clerk.

The Dakota Engineering Company, Mitchell, S. D., is preparing plans for a water works system for the city of Murdo, S. D., the approximate cost of which is $10,000. The project is not as yet far enough advanced to receive bids for construction and equipment.

Although it is probable the Glencoe Electric Light Company, Glencoe, Minn., will make no change in its system this season, such a course is contemplated in the future which will include the installation of steam turbines with a rating of 150 kw. A. H. Lane is superintendent.

Foundries.

Jno. A. Selinger, Exchange Building, Pottstown, Pa., is erecting a foundry at Bramcote, a suburb of Pottstown, which will be equipped with modern machinery. Mr. Selinger has one cupola and will add another immediately. He is in the market at the present time for a portable crane.

The Link-Belt Company, chain manufacturer, has bought 20 acres of ground about a mile south of the present plant at Indianapolis, Ind., upon which it will erect a new malleable iron plant to cost $200,000. There will be two buildings, each 800 ft. long.

Operations have been resumed at the plant of the Avondale Stove & Foundry Company, Birmingham, Ala.

The plant of the Southern Pipe & Foundry Company, North Birmingham, Ala., has been put in operation.

The Watkins Machine & Foundry Company of Hattiesburg, Miss., has secured a contract for the repair work on 900 cars of the New Orleans & Northeastern Railway.

Fires.

The plant of the Cambridge Architectural Iron Company, Cambridge, Mass., was damaged $8000 by fire September 1.

The stove and heating apparatus manufacturing plant of the A. J. Lindemann & Hoverson Company, Milwaukee, Wis., was recently burned, the loss being about $40,000.

The machine shop of Edward Moore & Son, Kittanning, Pa., was recently burned, the loss being about $5000.

The plant of the Indiana Shovel Company at New Castle, Ind., was recently damaged $20,000 by fire.

The plant of the Pennsylvania Forge Company, Bridesburg, Philadelphia, was badly damaged by fire on September 3. The damage is estimated at $10,000. Plans are being made to continue the business uninterruptedly.

Hardware.

The Ward Nail Company, Youngstown, Ohio, has been incorporated, with a capital of $10,000, and will develop a new process in the manufacture of wire nails invented by Mr. Ward.

At a meeting of the directors of the Scully Detachable Horseshoe Company, Rome, N. Y., on August 28, Dr. T. P. Scully was elected president and William H. Lewis secretary. As soon as the company is financed it will build a factory in that city for the manufacture of horseshoes.

The D. J. Blasier Handle Company, Rome, N. Y., has leased a factory building at Mohawk, N. Y., and will install machinery for a branch plant to be operated in charge of D. J. Blasier,

Jr., for the manufacture of handles for axes, hammers, garden implements, &c., also for the manufacture of wagon and automobile spokes.

The Wayne Mfg. Company, Dayton, Ohio, manufacturer of the Fountain power motor washing machines, has opened an office at 504 Penn avenue, Pittsburgh, in charge of T. E. Barnes.

Miscellaneous.

The Baltimore Retort & Fire Brick Company, Baltimore, Md., has completed plans for rebuilding its plant which was recently destroyed by fire. The new buildings will be of brick and steel construction, and will be made as near fireproof as is possible. Temporary quarters for molding have been secured, and as the finished stock and kilns were uninjured the delivery of regular goods has gone on uninterruptedly.

Casey & Murray, Powers Building, Rochester, N. Y., who received the contract for Barge Canal work at Little Falls, N. Y., are now ready for figures on the following material entering into construction of the work: 155,200 lb. structural steel, 110,300 lb. of corrugated reinforcing bars, 26,800 lb. iron castings, 138,000 lb. of metal for upper lock gate, 430,000 lb. of metal for lower lock gate, 80,000 lb. of metal for buffer dams, 60,000 lb. of metal for lock valves, 680,000 lb. of metal for guard gates, 1080 ft. of wrought iron pipe railing.

Bids were opened on September 4 by the Grade Crossing Commissioners, C. B. Guthrie, chief engineer, Ellicott Square Building, Buffalo, N. Y., for subway under the International Bridge approach. The Eastern Concrete Steel Company, Morgan Building, Buffalo, was low bidder at $62,036.70. Contract includes 50 tons of corrugated steel bars for reinforcing.

The Standard Force Feed Lubricator Company, Rochester, N. Y., has been incorporated, with a capital stock of $20,000, to manufacture lubricators of all kinds, machinery, hardware and supplies. The directors are John Sherry, 36 Avenue C; John F. Dake, 95 Melville street, and Thomas F. Andrews.

The Niagara Lead Company, Niagara Falls, N. Y., has been incorporated, with $100,000 capital stock, by Edward G. Morris and Pedro Salome of Philadelphia, and F. L. Lovelace, 120 Main street, Niagara Falls. The company was formed to take over the works of the Lead Reduction Company, and will remodel the building and add a large amount of new machinery.

The Board of Water Commissioners, Cohoes, N. Y., has prepared general specifications for filtering companies, and contractors who may desire to submit detailed plans and proposals for the construction of a mechanical filtration plant for the city.

The Ladd Fire Brick Company, Fort Payne, Ala., has purchased the old Kolin Company's firebrick plant at that place, and has added new machinery. In addition to ordinary firebrick it is the intention to manufacture brick for metallurgical furnaces, also brick for architectural work. The clay in the vicinity of Fort Payne is reported to be of exceptionally high quality.

J. J. Jones and F. H. Locke have formed the J. & L. Sign Company, 1200 Westinghouse Building, Pittsburgh, and are arranging to incorporate under a Pennsylvania charter with a capitalization of $25,000, for the purpose of manufacturing a line of improved electric signs for store and outdoor purposes.

The sale of the Pope Motor Car Company's plant at Indianapolis, Ind., for $200,000, was ordered by the court at Newark, N. J., September 8. The receivers for the company have an offer for that amount for the plant.

A New Slide Rule.—M. J. Eichhorn, an electrical engineer, 5759 Aberdeen street, Chicago, Ill., has designed a trigometric slide rule for solving all problems in plane trigonometry. It is not intended to take the place of the various forms of the Manheim rules, which it resembles in all respects except the graduations, but because of the latter it is the simplest and quickest means of obtaining the solutions of triangles where greater accuracy than three or four places is not necessary.

The blast furnaces of the Carnegie Steel Company in the Pittsburgh District are gradually resuming operations. On September 1, seven Carrie stacks were in blast, four Duquesne, eight Edgar Thomson, two Lucy, and three Clairton. The idle stacks are three Edgar Thomson, three Isabella, and two Union, at Donora, Pa. Furnace A at Edgar Thomson blew in August 5, and Lucy No. 1 August 27. Aside from the above, seven stacks in the Pittsburgh District were idle on September 1, these being Soho of the Jones & Laughlin Steel Company, No. 3 of the National Tube Company, at McKeesport, the stack of the Midland Furnace Company, at Midland, Pa., and the four stacks of the American Steel & Wire Company, comprising Edith, Neville Island No. 1 and the two Schoenberger.

Pittsburgh Foundrymen Inspect Coal and Coke Plants.

The Jamison Coal & Coke Company, Pittsburgh, on September 7 tendered to the Pittsburgh Foundrymen's Association a trip of inspection to its different plants located on the Alexandria and Crabtree branches of the Pennsylvania Railroad, in Westmoreland County, Pa. The original party numbered about 150, and left Pittsburgh on a special train. A short meeting of the Nominating Committee was held on the outgoing trip, and the following were nominated: G. W. Gale, Pennsylvania Malleable Company, McKees Rocks, Pa., for president; J. T. Speer, Pittsburgh Valve Foundry & Construction Company, Pittsburgh, for vice-president; J. S. Seaman, Seaman-Sleeth Company, Pittsburgh, for treasurer; F. H. Zimmers, Union Foundry & Machine Company, Pittsburgh, for secretary. The Executive Committee is to consist of H. E. Field, Benjamin Fuller, Edward Frohman, John A. Logan and W. A. Johnson.

Arrangements had been made to stop at different stations for out of town guests, and on the arrival of the party at Luxor, Pa., where plant No. 1 is located, it numbered nearly 200, which included members of the association and friends of the Jamison Coal & Coke Company. The company operates 344 coke ovens at this plant, which, with the new crusher and washer lately installed, were of special interest to the visitors, many of whom had never seen the actual process of making coke. The party was then taken to plant No. 2, at Hannastown, Pa., where the company has 516 ovens in operation. Many entered the 215-ft. shaft to get an idea of the underground operations. Plant No. 3, at Forbes Road, where the company operates only a coal mine, was visited, and the party was then conducted to a near-by grove where dinner was served, afterward being taken to plant No. 4, at Crabtree. Here the company operates 305 ovens. While some of the party looked over the plant the others witnessed or engaged in a ball game. The party returned to Pittsburgh in the evening. A vote of thanks was given to the Jamison Coal & Coke Company for the courtesies extended.

Lake Ore Moving at an Increasing Rate.

The August shipments of Lake Superior iron ore down the lakes were 4,749,655 gross tons, an increase of 385,372 tons over the preceding month, but a falling off of 2,057,156 tons from the total for August, 1907. The season movement this year, to September 1, was 11,984,936 tons, against 24,341,552 tons to September 1, 1907, a falling off of 12,356,616 tons. The figures, by ports, for the two seasons are as follows:

	To September 1, 1908.	To September 1, 1907.
Escanaba	1,351,513	3,731,165
Marquette	625,399	1,924,464
Ashland	1,037,185	2,314,760
Superior	1,723,208	4,416,454
Duluth	4,583,987	7,202,645
Two Harbors	2,663,644	4,752,064
Totals	11,984,936	24,341,552

If shipments should continue in September, October and November at the rate of August, the season total would exceed 26,000,000 tons. This is several million tons above the estimate commonly made early in the season. Developments in the iron trade in the coming month may help blast furnacemen to decide as to their ore requirements, this being still in a good many cases an open question.

The Jones & Laughlin Steel Company is now occupying its magnificent new eight-story office building, at the corner of Third avenue and Ross street, Pittsburgh. The building is finished throughout in hardwood, contains all modern equipment devised for office purposes, and is attractive and convenient in every way. The company has issued invitations to the press for an inspection of the building on Friday evening, September 11, and for a public inspection of the building on September 12, from 2 to 5 p. m.

The Iron and Metal Trades

PIG IRON PRODUCTION INCREASING

CANADA'S LARGE REQUIREMENTS.

A Banner Month in Wire.

The production of Pig Iron is gaining steadily, thus reflecting the gradual recovery of the industry. It is fair to say, however, that so far as the merchant furnaces are concerned the expansion is regarded by many as a little premature. There were 18 more furnaces active on September 1 than were in operation on August 1, while in the two months of the second half of the year the gain was 28 furnaces. It is known that additional stacks are preparing to go in, and, as a matter of fact, some have already started since the opening of the month. We estimate the capacity of the active plants on September 1 at 313,112 tons weekly, as compared with 284,590 tons on August 1, and the minimum of 232,652 tons on January 1, this year, and the maximum of 525,538 tons on May 1, 1907.

The production of the Coke and Anthracite furnaces reached 1,348,831 tons in August, as compared with 1,218,129 tons in July.

There has been rather more activity in Pig Iron in certain sections, and on the whole the East and the South are gaining in strength. In eastern Pennsylvania there was a sale of 20,000 tons of Basic Pig for the last quarter's delivery at a close price. In the Central West some makers continue to make concessions. Thus Mahoning and Shenango Valley producers are offering No. 2 Foundry in the Chicago District at $16.50, equivalent to $14.10 at furnace. A furnace interest on Lake Erie has sold 13,000 tons of Foundry and Malleable Iron for delivery at different points in the Central West.

Much interest is attached to the recent large requirements of the Canadian market. Including the 10,000 tons of Shapes and Plates recently sold, there have been placed during the last few weeks a total of 52,000 tons of Shapes and Plates on the Canadian market. The activity in railroad building is responsible for a large share of the Iron and Steel requirements. The Transcontinental Commission has recently awarded the construction of about 575 miles of track, which will call for 44,000 tons of Rails, of which the Steel mills on this side of the border expect to get a share. The Canadian Pacific recently ordered a total of about 60,000 tons from the Algoma mill.

Generally speaking, a better feeling is developing in the export trade, and business is picking up in all quarters, with the exception of Great Britain, where the main reliance of the steel trade, the shipbuilding industry, is practically prostrate. There are some large rail requirements in the international market. Since the financing has been done, it is expected that the negotiations will soon come to an issue.

Of the Harriman order for cars of different types, about 4500 have been placed, leaving from 2000 to 2500 still under negotiation.

Comparatively few Structural contracts have been awarded during the past week, among the larger being 3500 to 4000 tons for a building in Los Angeles.

The Wire trade is making some records, considering prevailing conditions. During the month of August the American Steel & Wire Company booked orders aggregating 164,000 tons, which shows how close to the normal consumption are the requirements of the agricultural community and the trade at large. For a considerable period the old policy of anticipating future business by sales for distant delivery has not been followed, and in the Wire trade the orders are closer to the actual demand.

In Old Material evidence is cropping up that the upward movement has somewhat overreached itself. Many consumers seem to feel that the psychological moment for an advance which will hold has not yet arrived.

Resale lots of Electrolytic Copper have been marketed this week at 13½c., the quantities involved being larger than is generally believed.

A Comparison of Prices.

Advances Over the Previous Month in Heavy Type, Declines in Italics.

At date, one week, one month and one year previous.

	Sept.9, 1908.	Sept.2, 1908.	Aug.12, 1908.	Sept.11, 1907.
PIG IRON, Per Gross Ton:				
Foundry No. 2, Standard, Philadelphia	$16.50	$16.50	$16.50	$20.75
Foundry No. 2, Southern, Cincinnati	**15.50**	15.50	15.25	21.25
Foundry No. 2, Local, Chicago	17.00	17.00	17.00	24.50
Basic, delivered in Eastern Pa.	**15.25**	15.25	15.00	19.25
Basic, Valley Furnace	*14.50*	14.50	14.75	20.50
Bessemer, Pittsburgh	*15.90*	15.90	16.30	22.90
Gray Forge, Pittsburgh	*14.40*	14.65	14.65	21.40
Lake Superior Charcoal, Chicago	19.50	19.50	19.50	27.00
BILLETS, &c., Per Gross Ton:				
Bessemer Billets, Pittsburgh	25.00	25.00	25.00	29.50
Forging Billets, Pittsburgh	27.00	27.00	27.00	33.00
Open Hearth Billets, Phila	26.20	26.20	26.20	31.00
Wire Rods, Pittsburgh	33.00	33.00	33.00	36.00
Steel Rails, Heavy, Eastern Mill	28.00	28.00	28.00	28.00
OLD MATERIAL, Per Gross Ton:				
Steel Rails, Melting, Chicago	**15.00**	15.00	14.25	17.00
Steel Rails, Melting, Phila	**15.25**	15.25	14.50	16.75
Iron Rails, Chicago	**16.75**	16.75	16.50	20.25
Iron Rails, Philadelphia	**20.00**	20.00	19.00	20.50
Car Wheels, Chicago	15.50	16.00	15.50	24.50
Car Wheels, Philadelphia	**15.00**	15.00	14.50	23.00
Heavy Steel Scrap, Pittsburgh	*14.25*	14.25	15.00	17.75
Heavy Steel Scrap, Chicago	13.00	13.00	13.00	14.75
Heavy Steel Scrap, Philadelphia	**15.25**	15.25	14.50	16.50
FINISHED IRON AND STEEL, Per Pound:	Cents.	Cents.	Cents.	Cents.
Refined Iron Bars, Philadelphia	**1.45**	1.45	1.40	1.85
Common Iron Bars, Chicago	1.50	1.50	1.50	1.78
Common Iron Bars, Pittsburgh	1.40	1.40	1.40	1.70
Steel Bars, Tidewater, New York	1.56	1.56	1.56	1.86
Steel Bars, Pittsburgh	1.40	1.40	1.40	1.60
Tank Plates, Tidewater, New York	1.76	1.76	1.76	1.86
Tank Plates, Pittsburgh	1.60	1.60	1.60	1.70
Beams, Tidewater, New York	1.76	1.76	1.76	1.86
Beams, Pittsburgh	1.60	1.60	1.60	1.70
Angles, Tidewater, New York	1.76	1.76	1.76	1.86
Angles, Pittsburgh	1.60	1.60	1.60	1.70
Skelp, Grooved Steel, Pittsburgh	1.45	1.45	1.45	1.85
Skelp, Sheared Steel, Pittsburgh	1.50	1.50	1.50	1.95
SHEETS, NAILS AND WIRE, Per Pound:	Cents.	Cents.	Cents.	Cents.
Sheets, No. 27, Pittsburgh	2.40	2.40	2.40	2.50
Wire Nails, Pittsburgh	1.95	1.95	1.95	2.05
Cut Nails, Pittsburgh	**1.80**	1.80	1.75	2.10
Barb Wire, Galv., Pittsburgh	2.40	2.40	2.40	2.50
METALS, Per Pound:	Cents.	Cents.	Cents.	Cents.
Lake Copper, New York	*13.87½*	13.87½	14.00	17.00
Electrolytic Copper, New York	*13.50*	13.75	13.85	16.50
Spelter, New York	4.75	4.75	4.75	5.35
Spelter, St. Louis	*4.60*	4.60	4.62½	5.20
Lead, New York	4.60	4.57½	4.60	4.75
Lead, St. Louis	4.45	4.45	4.45	4.67½
Tin, New York	*28.60*	29.00	30.50	37.00
Antimony, Hallett, New York	8.00	8.00	8.00	10.00
Nickel, New York	45.00	45.00	45.00	45.00
Tin Plate, 100 lb., New York	$3.89	$3.89	$3.89	$4.09

Chicago.

FISHER BUILDING, September 9, 1908.—(*By Telegraph.*)

A summary of the week's activities indicates that mill operations on the whole are fairly well sustained. Continued improvement in Steel Bar specifications gives evidence of increased consumption, but there is still a good deal of hesitancy exhibited in the anticipation of forward requirements. Practically all orders, not only in this but in other lines of mill products, are accompanied by instructions for immediate shipment, and the urgency of these demands seem to demonstrate the meagerness of stocks in the hands of manufacturers. A result of this practice is seen in the frequent roll changes required to promptly supply small miscellaneous orders, which, while advantageous to buyers under existing circumstances, adds to the expense of production. The most important contract for Structural Material now in the hands of fabricators for bids is that for the 12,000 tons required for the new Northwestern Railway depot. A good many small Structural jobs are coming into the market from various sources, but no bridge work of importance is included in recent transactions. In prospect, however, are several bridge structures which when developed will take about 17,000 tons. Whether material for these bridges will be placed in the near future or deferred until next year is a question now under consideration, which it is believed will be determined within a short time. The demand for Car Axles growing out of recent contracts placed for new cars has led to the placing of an order with the leading producer of 4000 tons. Light Rails are relatively more active than other lines of railroad material, and the

improved conditions of trade developed in the month of August have thus far shown no signs of abatement in the present month. A few small orders for Standard Section Rails are coming into the market from Western roads, one of 2500 tons from an Idaho line having been entered during the week. The movement in Pig Iron continues light, and with Southern furnaces holding at prices above the normal market level, most of the tonnage offered is being taken by the Northern producers. The chief feature of the situation at the present time is the low prices ruling in the Mahoning and Shenango valleys, from which Iron has been offered on a basis of $14.10, at furnace, for No. 2 Foundry. Old Material is distinctly weaker and dealers are growing more conservative in their attitude. The wavering tendency in values now apparent is not calculated to inspire confidence in the wisdom of present purchases, either speculatively or for actual consumption.

Pig Iron.—The past week has developed very little new business. What buying there is is mainly in small lots for prompt shipment, and though quite a number of inquiries are coming in for first half requirements few of them seem to be of a positive character. The only sale reported for next year's delivery was 2000 tons of Northern Foundry Iron taken by a Michigan stove concern, which was also negotiating for 2000 tons of Southern and 1000 tons of Silicon Iron, but it is understood that only the Northern Iron has been purchased. Another sale of Northern Foundry Iron was of 500 tons taken by a large local manufacturing interest, which will be supplied by a Valley furnace at $16.50, Chicago, which is equivalent to $14.10, Valley. A fair amount of small orders is coming in, but owing to the fact that the principal Southern producers continue to hold at $13, Birmingham, most of the tonnage is being diverted to Northern furnaces. A few sellers of Southern Iron offer moderate lots for last half shipment at $12.50, Birmingham basis, which is equivalent to $16.85, Chicago, but in view of the weakness of Valley prices this figure is not attractive to buyers. While the local Northern furnaces still maintain a nominal minimum of $17, at furnace, they are likewise affected by Valley competition, which necessitates more or less recession from regular schedules. The most promising feature in the situation so far as the consumption of Iron is concerned is that within the past few weeks quite an amount of material on old contracts has been taken and few holdups are being asked, save by a few of the jobbing melters. While, on the whole, the situation has not materially improved, neither can it be said to exhibit tendencies of a markedly discouraging nature. The following quotations are for September delivery, f.o.b. Chicago:

Lake Superior Charcoal	$19.50 to $20.00
Northern Coke Foundry, No. 1	17.50 to 18.00
Northern Coke Foundry, No. 2	17.00 to 17.50
Northern Coke Foundry, No. 3	16.50 to 17.00
Northern Scotch, No. 1	18.00 to 18.50
Southern Coke, No. 1	17.35 to 17.85
Southern Coke, No. 2	16.85 to 17.35
Southern Coke, No. 3	16.35 to 16.85
Southern Coke, No. 4	15.85 to 16.35
Southern Coke, No. 1 Soft	17.35 to 17.85
Southern Coke, No. 2 Soft	16.85 to 17.35
Southern Gray Forge	15.35 to 15.85
Southern Mottled	15.10 to 15.60
Malleable Bessemer	17.56 to 18.00
Standard Bessemer	18.40 to 18.90
Jackson Co. and Kentucky Silvery, 6 %	20.40 to 20.90
Jackson Co. and Kentucky Silvery, 8 %	21.40 to 21.90
Jackson Co. and Kentucky Silvery, 10 %	23.40 to 23.90

(*By Mail.*)

Billets and Rods.—An order for Axle Billets amounting to 4000 tons was placed last week with the leading producer by a local forge shop which will supply the axles for the 1000 Steel cars recently purchased by the Chicago & Alton Railway. Outside of this transaction the demand for Forging Billets is limited to current requirements, which continues light. Some shading of prices which is reported indicates that regular schedules are not being uniformly observed. The regular price of Forging Billets is unchanged at $28.50, base, Chicago. Specifications for Wire Rods are coming in lots of fairly good tonnage, and prices are reported to be unyieldingly maintained at the following quotations: Bessemer, $33; Basic, $34; Chain, $33, all at Pittsburgh.

Rails and Track Supplies.—No large orders were included in this week's transactions on Standard Rails, though there continues to be a considerable number of inquiries for small lots for early delivery. These range in amounts from 500 to 3000 tons and represent the miscellaneous requirements of small roads. One order of this character secured by the leading interest during the week, amounting to 2500 tons, came from a small road in Idaho. An inquiry for 22,000 tons of Standard Rails for the construction of a prospective road in Iowa is reported, but it is apparently of a more or less tentative nature, and is not regarded as promising immediate results. Encouraging progress is being made in Light Rails, and the improvement noted for the month of August is sustained in the tonnage entered thus far in the present month. A few small lots of Traction Rails have been recently placed, and orders amounting to about 1000 tons are now in negotiation. We quote as follows: Angle Bars, accompanying Rail orders, 1908 delivery, 1.50c.; car lots, 1.60c.; Spikes, 1.80c. to 1.90c., according to delivery; Track Bolts, 2.10c. to 2.15c., base, Square Nuts, and 2.25c. to 2.30c., base, Hexagon Nuts. The store prices on Track Supplies range from 0.15c. to 0.20c. above mill prices. Light Rails, 25 to 45 lb., $26; 20-lb., $27; 16-lb., $28; 12-lb., $29. Standard Sections, $28, f.o.b. mill, full freight to destination.

Structural Material.—The principal feature of interest last week was the opening of bids for the new drainage canal bridge, on which two sets of figures were asked, one on the basis of furnishing the bridge outright, without reference to the old structure, which it will replace; the other being conditioned upon the contractors taking the old bridge. It is highly probable that the figures based upon the latter proposition will be the one finally accepted; of the bids submitted under the latter conditions that of the Chicago Bridge & Iron Works was the lowest and figures out about $413,646 at the pound price at which the bids were tendered. The spread between the first five bids offered amounted to a little more than $15,000, which is regarded as indicating a disposition among fabricators to figure a little stronger. Drawings for the Chicago & Northwestern depot building, referred to in last week's report, are now in the market, and bids on this material are to be submitted by October 1. The general run of business for the week has been in small orders, the only one taken by the leading interest amounting to over 100 tons was a lot of 150 tons for an addition to the State Reformatory, Green Bay, Wis. Several railroad bridges involving about 17,000 tons of material are under consideration, and it is expected that a decision will be reached in a few days as to whether purchases will be made now or deferred until next year. Mills are a little better supplied with work by reason of more liberal specifications. Prices from store are 1.95c. to 2c. Mill prices at Chicago are as follows: Beams and Channels, 3 to 15 in., inclusive, 1.78c.; Angles, 3 to 6 in., ¼-in. and heavier, 1.78c.; larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 6 in. or one or both legs, 1.88c.; Beams, larger than 15 in., 1.88c; Zees, 3 in. and over, 1.78c.; Tees, 3in. and over, 1.83c.

Plates.—Small orders from various sources continue to furnish about all the new business being entered by the mills. No heavy work has developed requiring tonnages of notable size, and specifications are not being offered freely enough to warrant increased activity in mill operation. The demand for warehouse shipments has slackened up somewhat in the last week or two. Considerable irregularity in prices has developed and prices are now being shaded in some cases as much as $2 a ton. We quote mill shipments as follows: Tank Plates, ¼-in. and heavier, wider than 6¼ and up to 100 in. wide, inclusive, car lots, Chicago, 1.78c.; 3-16 in., 1.88c.; Nos. 7 and 8 gauge, 1.93c.; No. 9, 2.03c.; Flange quality, in widths up to 100 in., 1.88c., base, for ¼-in. and heavier, with the same advance for lighter weights; Sketch Plates, Tank quality, 1.88c.; Flange quality, 1.98c. Store prices on Plates are as follows: Tank Plates, ¼-in. and heavier, up to 72 in. wide, 2c. to 2.10c.; from 72 to 96 in. wide, 2.10c. to 2.20c.; 3-16 in. up to 60 in. wide, 2.10c. to 2.25c.; 72 in. wide, 2.30c. to 2.40c.; No. 8, up to 60 in. wide, 2.10c. to 2.15c.; Flange and Head quality, 0.25c. extra.

Sheets.—The movement in Sheets continues fairly even and has developed no important features of interest so far as the demand is concerned. Some slowing up is apparent in store shipments. Mill prices are subject to a shade of at least $2 a ton where desirable specifications are involved. The scantiness of stocks in the hands of dealers and manufacturers is apparent from the insistent demand for prompt shipment. We quote mill shipments as follows, Chicago: Blue Annealed, No. 10, 1.98c.; No. 12, 2.05c.; No. 14, 2.08c.; No. 16, 2.18c.; Box Annealed, Nos. 17 to 21, 2.43c.; Nos. 22 to 24, 2.48c.; Nos. 25 and 26, 2.53c.; No. 27, 2.58c.; No. 28, 2.68c.; No. 29, 2.78c.; No. 30, 2.88c.; Galvanized Sheets, Nos. 10 to 14, 2.63c.; Nos. 15 and 16, 2.83c.; Nos. 17 to 21, 2.98c.; Nos. 22 to 24, 3.13c.; Nos. 25 and 26, 3.33c.; No. 27, 3.53c.; No. 28, 3.73c.; No. 30, 4.23c.; Black Sheets from store: Blue Annealed, No. 10, 2.15c.; No. 12, 2.20c.; No. 14, 2.25c.; No. 16, 2.35c.; Box Annealed, Nos. 18 to 21, 2.60c.; Nos. 22 to 24, 2.65c.; No. 26, 2.70c.; No. 27, 2.75c.; No. 28, 2.85c.; No. 30, 3.25c.; Galvanized from store: Nos. 10 to 16, 3c.; Nos. 18 to 20, 3.15c.; Nos. 22 to 24, 3.30c.; No. 26, 3.50c.; No. 27, 3.70c.; No. 28, 3.90c.; No. 30, 4.40c. to 4.45c.

Bars.—No dissatisfaction is expressed at the way specifications are coming out, and it is stated that continued improvement at the present rate will soon establish nearly normal conditions in Steel Bar mills. Some new orders are being entered for Iron Bars, and mills are operating at slightly increased capacity. While the requirements of the implement interests are the chief factor in the increase of Bar tonnage, yet the demand from other sources is improving. Prices on both Steel and Iron Bars, we are advised, are being regularly maintained. Quotations, Chicago, are as follows: Steel Bars, 1.58c., with half extras; Iron Bars, 1.50c.; Hoops, No. 13 and lighter, 1.98c., full extra Hoop card; Bands, No. 12 gauge and heavier, 1.58c., half extra Steel Bar card; Soft Steel Angles and Shapes, 1.68c., half extras. Store prices are as follows: Bar Iron, 2c. to 2.15c.;

Steel Bars, 1.90c. to 2c.; Steel Bands, 1.90c., as per Bar card, half extras; Soft Steel Hoops, 2.25c. to 2.35c., full extras.

Merchant Pipe.—Save that the demand not only holds its own but continues to make small gains, there is nothing of special interest observed in the movement of Merchant Pipe. Jobbers in placing their orders are not anticipating their requirements beyond 60 or 90 days at the most, since the prompt shipments now available enable them to replenish their stocks at short notice. The following mill discounts are quoted: Black Pipe, ¾ to 6 in., 73.2; 7 to 12 in., 70.2; Galvanized, ¾ to 6 in., 63.2. These discounts are subject to one point on the base. From store, in small lots, Chicago jobbers quote 73 per cent. on Black Steel Pipe, ¾ to 6 in. About three points above these prices is asked for Iron Pipe.

Boiler Tubes.—A slightly improved demand is experienced for Merchant Tubes, but it is not pronounced enough to be regarded as significant of increased activity in boiler shops. The railroads are ordering Locomotive Tubes in small lots for actual needs. Mill quotations for future delivery, on the base sizes, are as follows: 2¾ to 4½ in., inclusive, Steel Tubes, 63.2; Iron, 50.2; Seamless, 50.2; 2½ in. and smaller, and lengths over 18 ft., and 2½ in. and larger, and lengths over 22 ft., 10 per cent. extra. Store prices are as follows:

	Steel.	Iron.	Seamless.
1 to 1½ in	35	35	35
1¾ to 2¼ in	50	35	35
2½ in	52½	35	35
2¾ to 5 in	60	47½	47½
6 in. and larger	50	35	..

Merchant Steel.—No new business to speak of is being placed, but specifications against contracts are being offered in fairly satisfactory volume. Since the implement makers are the largest factors in this division of the market, continued improvement is expected as the season advances. We quote as follows: Planished or Smooth Finished Tire Steel, 1.78c.; Iron Finish, up to 1½ x ½ in., 1.73c., base, Steel card; Iron Finish, 1½ x ½ in. and larger, 1.58c., base, Tire card; Channels for solid Rubber Tires, ¾ to 1 in., 2.08c., and 1½ in. and larger, 1.98c.; Smooth Finished Machinery Steel, 2.08c.; Flat Sleigh Shoe, 1.63c.; Concave and Convex Sleigh Shoe, 1.83c.; Cutter Shoe, 2.05c.; Toe Calk Steel, 2.13c.; Railroad Spring, 1.98c.; Crucible Tool Steel, 7¼c. to 8c., and still higher prices are asked on special grades. Cold Rolled Shafting on contracts for 100 tons and over, 57 per cent. off; 56 per cent. off in car lots; 52 per cent. in less than car lots, on which carload freight is allowed within base territory.

Cast Iron Pipe.—The requirements of small municipalities for the extension and maintenance of water mains continue to supply a fair amount of tonnage. A number of such lettings, aggregating about 4000 tons, were awarded last week to the leading producer. Several lettings involving quantities ranging from 200 to 500 tons are advertised for early closure; but no lots of special importance are in sight, and owing to the lateness of the season there is small prospect of any large contracts being placed for delivery this year. Prices are unchanged, which we quote nominally per net ton, Chicago, as follows: Water Pipe, 4 in., $27; 6 to 12 in., $26; 16 in. and up, $25, with $1 extra for Gas Pipe.

Old Material.—The market is beginning to develop evidences of weakening, though no pronounced recession has yet taken place. It is evident, however, that the upward movement has overreached the limits of strength afforded by the present measures of consumption, and the outlook is not regarded as especially favorable to purely speculative trading. Some of the largest users of Melting Steel accumulated extensive stocks at the low prices ruling a few weeks ago, and are consequently under no compulsion to come into the market at the present time. It is estimated that a local Steel melter purchased around 20,000 tons of Frogs, Switches and Guard Rails prior to the recent advance, and other large consumers are said to be similarly provided. There is less inquiry also for Rerolling Steel Rails, but owing to the scant offerings prices have not receded. Local rolling mills are not aggressively in the market as buyers, since they interpret the present tendency as promising a more favorable level of prices in the near future. The meager tonnage of railroad material offered last week is reported to have brought fair prices, but the few sales that have been made to consumers included no lots of important size. Track dealers are bidding more conservatively because of the increasing difficulty of moving material promptly on the basis of present values. Railroad material up for disposal this week includes a list from the Baltimore & Ohio of 4000 tons and one from the Sante Fe of 1200 tons. We quote per gross ton, f.o.b. Chicago, as follows:

Old Iron Rails	$16.75 to $17.25
Old Steel Rails, rerolling	16.00 to 16.50
Old Steel Rails, less than 3 ft	15.00 to 15.50
Relaying Rails, standard sections, subject to inspection	20.00 to 21.00
Old Car Wheels	15.50 to 16.00
Heavy Melting Steel Scrap	13.00 to 13.50
Frogs, Switches and Guards, cut apart	13.50 to 14.00
Mixed Steel	10.25 to 10.75

The following quotations are per net ton:

Iron Fish Plates	$16.00 to $16.50
Iron Car Axles	18.50 to 19.00
Steel Car Axles	17.50 to 18.00
No. 1 Railroad Wrought	13.25 to 13.75
No. 2 Railroad Wrought	12.25 to 12.75
Railway Springs	13.25 to 13.75
Locomotive Tires, smooth	13.25 to 13.75
No. 1 Dealers' Forge	10.25 to 10.75
Mixed Busheling	8.00 to 8.50
Iron Axle Turnings	6.75 to 7.25
Soft Steel Axle Turnings	6.75 to 7.25
Machine Shop Turnings	6.75 to 7.25
Cast Borings	5.75 to 6.25
Mixed Borings, &c	5.75 to 6.25
No. 1 Mill	8.00 to 8.50
No. 2 Mill	7.00 to 7.50
No. 1 Boilers, cut to Sheets and Rings	9.50 to 10.00
No. 1 Cast Scrap	12.75 to 13.25
Stove Plate and Light Cast Scrap	12.00 to 12.50
Railroad Malleable	12.50 to 13.00
Agricultural Malleable	11.50 to 12.00
Pipes and Flues	9.75 to 10.25

Metals.—There is a fair amount of buying of Copper in small lots and some inquiry for car lots, but few of these have, however, resulted in orders. More activity is observed in Lead and Spelter, but purchases of these metals are likewise restricted to nearby requirements. Prices continue at practically the same level, with Copper firm at current quotations and Lead silghtly weaker. Quotations are as follows: Casting Copper, 13¾c.; Lake, 14c. to 14¼c., in car lots for prompt shipment; small lots, ¼c. to ⅜c. higher; Pig Tin, car lots, 32½c.; small lots, 34½c.; Lead, Desilverized, 4.60c. to 4.65c., for 50-ton lots; Corroding, 4.85c. to 4.95c., for 50-ton lots; in car lots, 2¼c. per 100 lb. higher; Spelter, 4.80c.; Cookson's Antimony, 10½c., and other grades, 9¾c. to 10¼c.; Sheet Zinc is $7, f.o.b. La Salle, in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, 13¼c.; Heavy Copper, 13c.; Copper Bottoms, 10⅝c.; Copper Clips, 11c.; Red Brass, 11½c.; Yellow Brass, 9c.; Light Brass, 6½c.; Lead Pipe, 4c.; Zinc, 3¾c.; Pewter, No. 1 21c.; Tin Foil, 23c.; Block Tin Pipe, 25c.

Philadelphia.

PHILADELPHIA, PA., September 8, 1908.

The market presents a strong appearance. Sellers of Pig Iron have in a number of instances marked up their asking price from 25c. to 50c. a ton for deliveries during the balance of the year. Orders are reported by producers of Pig Iron to have increased largely in August, and some pretty fair tonnages have already been booked so far this month. Several Eastern producers are contemplating the blowing in of increased capacity, and if the demand continues as active in September as it was in the previous month an increase in the output seems certain. In Finished Materials the demand seems to be gaining steadily, but that which develops from week to week is sometimes difficult to measure. There appears to be a little more railroad work coming out, and the placing of orders for material by the Pennsylvania Railroad for 15 freight locomotives, to be built in its own shops, is viewed with encouragement by the trade.

Pig Iron.—The leading feature in the Iron market during the week was a sale of 20,000 tons of Basic Iron to one of the Eastern Steel mills, for delivery in the last quarter of the year. The sale was at private terms and will enable the seller to put in an idle furnace, probably about October 1. The majority of sellers have their present capacity for Basic Iron pretty well taken and talk materially higher prices for delivery the balance of the year. Some smaller tonnages for fairly prompt shipment have been reported sold at $15.50, delivered, but some producers refuse to accept business for delivery the balance of the year at less than $15.75. A number of the melters are now displaying some interest in the market for Basic for next year's delivery. Sellers, however, still refuse to quote for shipment beyond the end of the year. In the Foundry grades sales have been rather light. Inquiries, however, have been numerous, and melters are giving considerable attention to their requirements for the balance of the year. Some small tonnages of eastern Pennsylvania No. 2 Foundry and No. 2 Plain Iron have been sold for shipment in the balance of the year at $16.75 to $17, delivered, for the former, and $16.25 to $16.75 for the latter, while a few scattered sales of No. 2 X Foundry in quantities ranging from 100 to 300 tons, for delivery over the first quarter of 1909, have been made at $17.50, delivered. A number of sellers still refuse to quote for next year's delivery, believing that a higher range of prices will prevail later in the year. Several sellers have announced flat advances of 25c. to 50c. a ton on No. 2 X Foundry, for delivery the balance of this year, but they have practically taken themselves out of the market, as Iron can still be had at old quotations. A sale of 1700 tons of Coke Malleable Iron to an eastern Pennsylvania foundry, for delivery the balance of the year, is reported at $17, delivered, while a lot of 300 tons Eastern No. 2 Plain Iron, for delivery in the next six months, was made by a local seller at $16.75, delivered. The Cast Iron Pipe makers are still in the market for low grade Irons, one nearby foundry having just come out with an inquiry for 2000 tons, while others would buy

if their idea of price would be met; but these grades appear to be scarce and sellers are maintaining a firm stand. Virginia Foundry Irons have been rather quiet. Some few sales, covering small tonnages of No. 2 X and No. 2 Plain, have been made at ruling quotations, although some sellers are asking an advance of 25c. a ton for early deliveries. Southern Iron has been inactive. Sales covering small tonnages for prompt shipment have been made on the basis of $12.50, Birmingham, for No. 2 Foundry, but the majority of sellers now hold to the $13 basis. There has been some further inquiry for Forge Iron, one for 2000 tons for delivery in the next three months being reported, but this grade is scarce and prices are strong, with little resulting business. Low Phosphorus Iron continues dull and inactive, but few inquiries coming out. Prices have an advancing tendency on nearly all grades of Pig Iron, but while a number of producers are asking higher prices they are not taking business, as it is still possible to get tonnage at the ruling quotations. There is, however, very little Iron offered at a concession, unless it be for the temporary purpose of booking enough tonnage to extend active blast furnace capacity. The following range of prices is quoted for delivery in buyers' yards, eastern Pennsylvania and adjoining territory, in the next 60 or 90 days:

Eastern Pennsylvania, No. 2 X Foundry	$16.50 to $17.00
Eastern Pennsylvania, No. 2 Plain	16.00 to 16.50
Virginia, No. 2 X Foundry	17.00
Virginia, No. 2 Plain	16.50 to 16.75
Gray Forge	15.25 to 15.50
Basic	15.25 to 15.50
Low Phosphorus	20.50 to 21.00

Ferromanganese.—The demand has been irregular and prices still show a wide range. Some business has been done for delivery in the first half of 1909, a sale of a lot of 600 tons for such delivery, at close to $43.50, seaboard, being reported. Quotations are unchanged, $43.50 to $44.50 being named for forward shipment, with prompt Ferro probably a shade less.

Steel Billets.—Business during the week has been dull and irregular. Some few small orders have been placed, but no heavy tonnages have come out. Prices are unchanged, Ordinary Rolling Steel, for delivery in this territory, being quoted at $26.20, with Forging Steel at $28.20, subject to the usual extras for high carbons and special sizes.

Plates.—A slightly better demand has developed. Local fabricators have placed orders for moderate quantities for minor bridge work, some of which run up to 300 and 400 tons. Orders for some little locomotive Steel have been placed, as have also a fair amount of orders for boiler Steel. Some of the local plants have made slight gains on production, and the outlook is more cheerful. Prices for delivery in this territory range as follows:

	Carloads. Cents.	Parts carload. Cents.
Tank, Bridge and Boat Steel	1.75	1.80
Flange or Boiler Steel	1.85	1.95
Commercial Firebox	1.95	2.00
Marine	2.15	2.20
Locomotive Firebox Steel	2.25	2.30

The above are base prices for ¼-in. and heavier. The following extras apply:	Extra per 100 lb.
3-16-in. thick	$0.10
Nos. 7 and 8, B. W. G.	.15
No. 9, B. W. G.	.25
Plates over 100 to 110 in.	.05
Plates over 110 to 115 in.	.10
Plates over 115 to 120 in.	.15
Plates over 120 to 125 in.	.25
Plates over 125 to 130 in.	.50
Plates over 130 in.	1.00

Structural Material.—A somewhat better demand is to be noted. Business, however, is still rather irregular and largely of a miscellaneous character. A few minor orders for bridge and building material have been placed, while some fairly large propositions are being estimated on. Current orders are mostly for fairly prompt shipment. For delivery in this territory prices are quotably unchanged, 1.75c. to 1.90c. being named, according to specification.

Sheets.—Business has again brightened up, and local mills are now running at about 75 per cent. of their capacity. The outlook is considered better, as orders, while small individually, are coming out more freely. The following range of prices is quoted for mill shipment, a tenth extra being added for small lots: Nos. 18 to 20, 2.50c.; Nos. 22 to 24, 2.60c.; Nos. 25 to 26, 2.70c.; No. 27, 2.80c.; No. 28, 2.90c.

Bars.—The demand for Iron Bars seems somewhat more active, and mills are running a little more regularly. Prices are stronger, due both to the slightly better demand, as well as the scarcity and higher price of some grades of Scrap. For delivery in this territory Refined Iron Bars are quoted at 1.45c. to 1.50c., with some sellers holding at 1.55c. Steel Bars are dull at 1.55c., with Rerolled Bars at 1.50c., delivered in this territory.

Coke.—No improvement is to be noted in the demand for Coke. Foundry Coke continues to be taken in small lots for shipment in the balance of the year. Furnace Coke is quiet, with a prospect of more activity, as the number of blast furnaces in active operation increases. Foundry Coke is quoted at $2 to $2.25, at oven, with Furnace Coke at $1.50 to $1.75, at oven. For delivery in this territory the following range of prices is quoted:

Connellsville Furnace Coke	$3.65 to $3.90
Foundry Coke	4.15 to 4.40
Mountain Furnace Coke	3.25 to 3.50
Foundry Coke	3.75 to 4.00

Old Material.—The market has taken on a more quiet appearance, the usual dullness pending the closing of the railroad lists being apparent. The tonnages offered by the railroads this month are said to be smaller, particularly as regards Heavy Melting Steel and No. 1 Choice Railroad Wrought. Sales have usually been small, and a waiting market characterizes the situation. Prices are practically unchanged, and are nominally quoted as follows for prompt deliveries in buyers' yards, eastern Pennsylvania and adjoining territory:

No. 1 Steel Scrap and Crops	$15.25 to $15.75
Low Phosphorus	18.50 to 19.00
Old Steel Axles	21.00 to 21.50
Old Iron Axles	22.50 to 23.00
Old Iron Rails	20.00 to 20.50
Old Car Wheels	15.00 to 15.50
Choice No. 1 R. R. Wrought	18.25 to 18.75
Machinery Cast	15.25 to 15.75
Railroad Malleable	13.50 to 14.00
Wrought Iron Pipe	14.00 to 14.50
New Bundled Sheets	12.50 to 13.00
No. 1 Forge Fire Scrap	12.00 to 12.50
No. 2 Light Iron	8.75 to 9.25
Wrought Turnings	11.50 to 12.00
Stove Plate	13.00 to 13.50
Cast Borings	10.75 to 11.25
Grate Bars	13.00 to 13.50

In order to concentrate its business and for closer supervision over its foundry under its new manufacturing process, the Tacony Iron Company has moved its executive offices to McGee street and State road, Tacony, Philadelphia, Pa.

St. Louis.

ST. LOUIS, September 7, 1908.

The steady increase in the volume of general business is shown in the clearing house reports of banking transactions. There is also considerable activity in real estate, and this includes land for several new structures, principally for warehouse or factory purposes. At present orders for Structural Steel are for buildings of moderate size and cost, and are more numerous from St. Louis tributary territory than from within the city proper. The Southwest is taking more finished stock than other sections. Favorable weather conditions and the passing of the vacation season are factors which are bringing about more activity in general business.

Coke.—The Coke market is ruling strong in price, doubtless in sympathy with the situation in Pig Iron, though the demand is moderate. For prompt shipment sales are being made at $2.25, at oven, and for later shipment up to the end of the year the best brands command $2.50. The supply of Coke appears to be ample. A leading house has inquiries aggregating 350 tons, shipment first half of 1909, and other houses also find a moderate inquiry ruling at present. It is thought the settlement of the strike at Birmingham will tend to ease in the market.

Pig Iron.—It develops that a leading producer is now asking $13.50, Birmingham, for No. 2 Foundry, shipment over the balance of the year. Other Pig Iron interests are offering at $13, Birmingham, and this figure now is reported as bottom for standard quality. One house gives out the sale of 100 tons of No. 1 Southern Soft at $13.65. The sale of 600 tons of No. 2 Foundry at $13 is reported by another concern, which also has an inquiry for the same quantity for shipment over the balance of the year. We hear that some producers decline to quote for 1909 and also that others will sell only for delivery prior to November. The house from which this information is obtained reports an inquiry out for two lots of No. 2—200 tons and 500 tons, respectively. The scarcity of Scrap is imparting firmness to low grade Pig Iron. The inquiry for 2000 tons, shipment over balance of the year, reported last week, is still pending, and we learn of an inquiry out for 5000 tons, shipment over first half of 1909.

Finished Iron and Steel.—Business in Structural Steel is moderate in volume, being still confined to comparatively small buildings. For railroad track and equipment purposes the demand is gaining ground. Plates and Angles are in better request than Bars, which are not so active. For highway spans there is a fair demand. Forgings also are in better call.

Lead and Spelter.—The market for Lead is ruling steadily, 4.50c. being asked and special brands held higher. Spelter is quiet at 4.65c. to 4.67½c. Ore is steady at $37, Joplin basis. The general tone is better and the outlook is regarded as gaining in strength and warranting the expectation of a steady demand for both Lead and Spelter for the balance of the year.

Old Material.—While but little increase is seen in the demand from mills, there is a very confident belief that it will develop in the course of a few days, as weather conditions

are more favorable and more inquiry from railroads and other large consumers of the finished products is in evidence. There continues to be a pronounced shortage in the supply of relayers, particularly heavy sections. The only list out is one of about 300 tons from the Vandalia Railroad. We quote, per gross ton, f.o.b. St. Louis, as follows:

Old Iron Rails	$15.50 to $16.00
Old Steel Rails, rerolling	14.50 to 15.00
Old Steel Rails, less than 3 ft	13.75 to 14.00
Relaying Rails, standard sections, subject to inspection	22.50 to 23.50
Old Car Wheels	14.50 to 15.00
Heavy Melting Steel Scrap	13.00 to 13.50
Frogs, Switches and Guards, cut apart	13.00 to 13.50
Mixed Steel	11.00 to 11.50

The following quotations are per net ton:

Iron Fish Plates	$14.50 to $15.00
Iron Car Axles	17.50 to 18.00
No. 1 Railroad Wrought	12.50 to 13.00
No. 2 Railroad Wrought	11.50 to 12.00
Railway Springs	12.00 to 12.50
Locomotive Tires, smooth	13.00 to 13.25
No. 1 Dealers' Forge	10.50 to 11.50
Mixed Borings, &c	5.50 to 6.00
Machine Shop Turnings	8.00 to 8.50
No. 1 Boilers, cut to Sheets and Rings	9.50 to 10.00
No. 1 Cast Scrap	12.00 to 12.50
Stove Plate and Light Cast Scrap	10.50 to 11.00
Railroad Malleable	11.00 to 11.50
Agricultural Malleable	10.00 to 10.50
Pipes and Flues	8.75 to 9.50

The Republic Iron & Steel Company is running full time at its plant at East St. Louis.

Adreon & Co. report an improved demand from railroads, especially for Brake Shoes and Car Forgings for repair orders.

The Banner Iron Works states that the demand for Structural Steel is quiet at present, but there is likely to be more activity in the near future.

The Otis Elevator Company experienced a dull spell in midsummer, but finds business showing improvement, both in the city and country, particularly in the Southwest.

The Heine Safety Boiler Company states that of late business has been good; in fact, the month of August showed normal conditions as to volume, though in value there was some shrinkage. In addition the company is in receipt of numerous inquiries. Work is in progress on the new shop, the contracts for Steel, brick and other material having been let.

The St. Louis Frog & Switch Company reports a more urgent inquiry from railroads for Crossings and some call for Frogs and Switches.

The Missouri Bridge & Iron Company is finding a good demand from public boards for highway spans. Orders for the past week aggregated 10 carloads for highway and river crossings.

The Ingersoll-Rand Drill Company found in August an improved demand, the inquiry from railroads being much better.

Fairbanks, Morse & Co. report that the demand, particularly from the Southwest section, for gas producers and producer gas engines, continues to be quite satisfactory.

The Crucible Steel Company of America finds Tool Steel in better request from railroad shops and some improvement in the inquiry from other sources.

The Curtis & Co. Mfg. Company reports receiving of late a larger number of inquiries for finished Steel products than for the previous four or five months.

The St. Louis Steam Forge & Iron Works regards the outlook as warranting the expectation of a change from the quite moderate demand that prevailed during the summer.

The Missouri Malleable Iron Company finds the prospect for more active conditions growing steadily more encouraging.

Birmingham.

BIRMINGHAM, ALA., September 7, 1908.

Pig Iron.—Recent developments relative to the supply of fuel for Southern furnace operation have resulted in a more cheerful tone to the Pig Iron market, but producers' asking prices are apparently unaffected. The sales that have been made at lower figures than a schedule of $13, Birmingham, for No. 2 can be traced directly to merchants, and the tonnage available from such sources at the price named is reported limited. An order for 1500 tons, delivered over the remainder of the year, was placed the past week with one of the leading furnace interests at $13 per ton, Birmingham. A lot of 800 tons for the fourth quarter was also placed at $13, Birmingham, for No. 2, and numerous carload lots for immediate shipment have brought from $13 to $13.50 per ton. Clifton High Manganese Iron, with silicon 3 per cent. and better, which is graded No. 1, recently sold for $14.50 per ton. For this brand a differential of $1 per ton between the grades is asked. Of the inquiries pending, one for 10,000 tons of Foundry grades for delivery this year is the chief attraction. The prospective purchaser of this tonnage is a Pipe manufacturer, and 6000 tons for the last quarter is to be placed by an interest in a similar line of manufacture. The quotations reported made on the tonnage mentioned are on a basis of $13, Birmingham. A large producer quotes $14, Birmingham, for the first half of 1909, but has entered no orders for that delivery. The demand for Charcoal Iron to be delivered promptly is strong, and an aggregate of 3500 tons is reported sold the past week at $20 per ton, f.o.b. furnace. The fact that manufacturers of Car Wheels are beginning to enter the market is an encouraging feature, as well as the material increase noted in local foundry melt.

Cast Iron Pipe.—The largest consideration in this market for some weeks was the contract to cover 3000 tons of Water Pipe for the city of Jackson, Miss., which was awarded September 5. This tonnage was secured by the United States Cast Iron Pipe & Foundry Company, but the price received is not made public. It is understood, however, that the transaction was a satisfactory one when compared with previous records. The list of prospective lettings for the near future is still without additional items. Cast Iron Soil Pipe has been more in demand, and quotations have been further advanced. There has also been a decided reduction in stocks, and preparations are being made for the resumption of operations at a number of plants now idle. Quotations on Water Pipe are unchanged, being as follows, per net ton, f.o.b. cars here: 4 to 6 in., $23; 8 to 12 in., $22; over 12-in., average 21, with $1 per ton extra for Gas Pipe.

Old Material.—The demand for Wrought Scrap and Light Cast continues to improve, and an advance in quotations has resulted. There is little demand for Steel Scrap, but no inducement is offered purchasers in the shape of concessions in price. Transactions involving Old Car Wheels, Iron Rails and Iron and Steel Axles have been among dealers principally without changing authorized quotations. Dealers' asking prices are revised as follows, per gross ton, f.o.b. cars here:

Old Iron Rails	$14.50 to $15.00
Old Iron Axles	15.50 to 16.00
Old Steel Axles	13.00 to 13.50
No. 1 Railroad Wrought	13.00 to 13.50
No. 2 Railroad Wrought	10.50 to 11.00
No. 1 Country Wrought	11.00 to 11.50
No. 2 Country Wrought	9.50 to 10.00
No. 1 Machinery	11.00 to 11.50
No. 1 Steel	9.50 to 10.00
Wrought Pipe and Flues	8.50 to 9.00
Stove Pipe and Light Cast	9.00 to 9.50
Cast Borings	5.00 to 5.50

Pittsburgh.

PARK BUILDING, September 9, 1908.—(*By Telegraph.*)

Pig Iron.—The market is practically stagnant as far as sales go, only a few small lots ranging from carloads up to about 100 tons changing hands. Consumers seem to be pretty well covered, and on some of the large purchases of Bessemer and Basic Iron made two or three months ago, for balance of the year delivery, they are not taking out their Iron very promptly. We quote Standard Bessemer at $15 to $15.25; Basic, No. 2 Foundry and Malleable Bessemer at $14.50 to $14.75, all at Valley furnace. There is no demand for Forge Iron, which is weak. We quote Northern Forge at $13.50, Valley furnace, or $14.40, Pittsburgh.

Steel.—Not much new business is coming up in Billets, Sheet Bars or Tin Bars, nearly all consumers of Steel being covered by contracts based on selling prices of Bessemer Pig Iron. We are advised that regular prices on Steel are being absolutely maintained by the mills. We quote Bessemer and Open Hearth Billets, 3⅞ in. and larger, up to and including 0.25 carbon, $25; 0.26 to 0.60 carbon, $1 extra; over 0.60 carbon, $2 extra, all f.o.b. Pittsburgh. For Wheeling, Martins Ferry, Follansbee, Newcastle, Sharon, Steubenville and Washington (Pa.) delivery, half the freight, or 50c. additional, is charged. Sheet and Tin Bars in random lengths are $27, f.o.b. Pittsburgh. Forging Billets take $2 advance over Rolling Billets.

(*By Mail.*)

Latest reliable advices relating to the Harriman car order are that the Harriman systems have placed about 4000 box cars with Steel under frames with the Barney & Smith Mfg. Company, Dayton, Ohio, and 500 all Steel cars with the Cambria Steel Company, Johnstown, Pa. The latter company has a capacity of 35 to 40 Steel cars per day when running full. The balance of the Harriman order, 2000 to 2500 cars, has not yet been placed, but may be given out in a short time. The orders for cars from the Chicago & Alton, the Delaware, Lackawanna & Western and the Harriman systems have given rise to the hope that

other roads will soon be in the market with contracts for cars, engines, Rails and other equipment. It is hardly likely, however, that much tonnage in Rails will be placed by the railroads for delivery this year, as it is getting too late, but it is stated that leading systems like the Pennsylvania, Baltimore & Ohio, Lake Shore and others are figuring on their requirements for next year, and that some heavy Rail tonnage for 1909 delivery may be expected to be placed shortly. General conditions in the Steel trade remain fairly satisfactory, considering that the railroads have been buying so little. Not much is doing in Pig Iron, but a fair amount of inquiry is out for small lots for delivery over the balance of the year. Prices have evidently reached bottom, being to some furnaces absolutely below the cost of making Iron. A few sales of small lots of Bessemer Iron have been made on the basis of $15 to $15.25, at Valley furnace, and any large tonnage wanted could readily be had at the lower price. Basic Iron is fairly strong at about $14.50, Malleable at $14.50 and Northern No. 2 Foundry at $14.50 to $14.75, Valley furnace, some sellers refusing to shade the higher price. Not much inquiry is reported for Billets or Bars, as nearly all consumers are covered by contracts, under which the average price of actual sales of Bessemer Iron are computed monthly, and then a charge of so much a ton is made for conversion. The low price ruling for Bessemer Iron, $15.90, Pittsburgh, means that most consumers are now getting their Billets at somewhat under $25 per ton, which is the official price. This is also true of buyers of Sheet and Tin Bars, the regular price of which is $27, Pittsburgh. In finished Iron and Steel, present conditions show a slight gain over the corresponding period in August, but the increase in demand is very slow, and probably will be for the balance of the year. Prices are being well maintained, with the exception of one or two lines. The Coke and Scrap markets continue quiet with no improvement in prices.

Ferromanganese.—Many consumers of Ferro who bought rather heavily some time ago have not been taking it out, and as a result a good deal is being offiered for prompt shipment and at relatively low prices. We quote foreign 80 per cent. Ferro at $43 to $43.50, seaboard, the rate to Pittsburgh being $1.95 a ton.

Ferrosilicon.—The market is very firm, and it is believed that higher prices will rule in the near future. A large consumer has recently closed for 50 tons on the basis of about $67.50 to $68, Pittsburgh. We quote 50 per cent. at $67.50 to $70.

Muck Bar.—The continued decline in price of Forge Iron, which has sold as low as $15.40, Pittsburgh, has further weakened prices of Muck Bar, and we quote best grades, made of all Pig Iron, at $24.50 to $25, Pittsburgh.

Rods.—The market has been quite active for the last two or three weeks, and sales have run up to a good tonnage, particularly in Bessemer and Chain Rods. Prices are firm and we continue to quote Bessemer Rods at $33, Basic $34 and Chain Rods $33, Pittsburgh.

Skelp.—Some low prices on Sheared Plates for making into Pipe have recently been made, and this was taken up a short time ago by some of the Plate mills, the statement being made that prices on Plates under ¾-in. were open. We quote: Grooved Steel Skelp, 1.45c. to 1.50c.; Sheared Steel Skelp, 1.50c. to 1.60c.; Grooved Iron Skelp, 1.60c. to 1.70c., and Sheared Iron Skelp, 1.70c. to 1.75c., f.o.b. Pittsburgh.

Steel Rails.—The market on Standard Sections is extremely quiet, and no large order is in sight. The Carnegie Steel Company is receiving some fair specifications against contracts, and is also selling a good deal of Light Rails, having received orders last week for about 1500 tons. The three Rail mills at the Edgar Thomson plant continue in operation to about 35 per cent. of capacity. Prices on new Light Rails, which continue to be shaded about $2 a ton by rerolling Rail mills, are as follows: $25 for 25 to 45 lb. sections, with $1 advance for 20 lb., $2 advance for 16 lb., and $3 advance for 12 lb. Standard Sections are $28, at mill, and Angle Splice Bars, 1.65c., at mill.

Structural Material.—Inquiry is undoubtedly much better, and if only a part of the tonnage comes out it will not be long until the Structural shops will be much busier than they are now. The Jones & Laughlin Steel Company has taken a contract for 3500 to 4000 tons of Plain Material for a building in Los Angeles, Cal., to be fabricated and erected by the Llewellyn Iron Works, Los Angeles. This week the contract will likely be placed for a Steel bridge across the Monongahela River at Monongahela City, Pa., about 2700 tons. Practically all of the local Structural concerns are bidding on this work. Complaints are still being made about the low prices quoted on Fabricated work, which it is claimed in many cases leave little or no profit. We quote, f.o.b. mill, Pittsburgh: I-Beams, H-Beams and Channels, 3 to 15 in., inclusive, 1.60c., net; Beams over 15 in., 1.70c., net; Angles, 3 to 6 in., inclusive, ¼ in. and up, 1.60c., net; Angles, over 6 in., 1.70c., net; Angles, 3 x 3 in. and up, less than ¼ in., 1.50c., base, half extras, Steel Bar card; Tees, 3 in. and up, 1.65c., net; Zees, 3 in. and up, 1.60c., net; Angles, Channels and Tees under 3 in., 1.50c., base, half extras, Steel Bar card; Deck Beams and Bulb Angles, 1.90c., net; Hand Rail Tees and Z-19, 3c., net; Checkered and Corrugated Plates, 3c., net.

Plates.—The Carnegie Steel Company has received specifications for the Plates and Shapes, about 9000 tons, for the two Ore boats to be built by the American Shipbuilding Company for the Pittsburgh Steamship Company. The boats are to be built at the Lorain yards, and the Plates are to be rolled at the Homestead Works. The demand from the general trade for Plates is quiet, but is slowly improving. There is still some shading, but this is mostly on the narrow sizes and does not exceed $1 to $1.50 a ton. Regular prices are as follows: Tank Plates, ¾ in. thick, 6¼ in. up to 100 in. wide, 1.60c., base, at mills, Pittsburgh. Extras over this price are as follows:

Tank, Ship and Bridge quality, ¼ in. thick on edges, 100 in. wide, down to but not including 6 in. wide, is taken as base.

Steel Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot, shall be considered ¼-in. Plate. Steel Plates over 72 in. wide must be ordered ¼-in. thick on edge, or not less than 11 lb. per square foot, to take base price. Steel Plates over 72 in. wide ordered less than 11 in. per square foot down to the weight of 3-16-in. shall take the place of 3-16-in.

Percentages as to overweight on Plates, whether ordered to gauge or weight, to be governed by the Association of American Steel Manufacturers' Standard Specifications.

Gauges under ¼-in. to and including 3-16-in. Plates on thin edges	$0.10
Gauges under 3-16-in. to and including No. 8	.15
Gauges under No. 8 to and including No. 9	.25
All sketches (excepting straight taper Plates varying not more than 4 in. in width at ends, narrowest end being not less than 30 in.)	.10
Complete Circles	.20
Boiler and Flange Steel Plates	.10
"A. B. M. A." and ordinary Firebox Steel Plates	.20
Still Bottom Steel	.30
Marine Steel	.40
Locomotive Firebox Steel	.50
Shell grade of Steel is abandoned.	
For widths over 100 in. up to 110 in	.05
For widths over 110 in. up to 115 in	.10
For widths over 115 in. up to 120 in	.15
For widths over 120 in. up to 125 in	.25
For widths over 125 in. up to 130 in	.50
For widths over 130 in	1.00

TERMS.—Net cash 30 days. Pacific Coast base, 1.50c., f.o.b. Pittsburgh.

Sheets.—The demand is keeping up fairly well, and the leading Sheet mills are turning out more tonnage and making heavier shipments on new orders and specifications against contracts than for some time. The demand is specially good for Corrugated Sheets, and there are some nice inquiries in the market. Prices are being fairly well maintained, but are sometimes shaded, not over $2 a ton, for prompt shipment. For shipments from mill regular prices are as follows: Blue Annealed Sheets, No. 10 and heavier, 1.80c.; Nos. 11 and 12, 1.85c.; Nos. 13 and 14, 1.90c.; Nos. 15 and 16, 2c.; Box Annealed, Nos. 17 to 21, 2.25c.; Nos. 22 to 24, 2.30c.; Nos. 25 and 26, 2.35c.; No. 27, 2.40c.; No. 28, 2.50c.; No. 29, 2.60c.; No. 30, 2.70c. Galvanized Sheets: Nos. 10 and 11, 2.45c.; Nos. 12 and 14, 2.55c.; Nos. 15 and 16, 2.65c.; Nos. 17 to 21, 2.80c.; Nos. 22 and 24, 2.95c.; Nos. 25 and 26, 3.15c.; No. 27, 3.35c.; No. 28, 3.55c.; No. 29, 3.70c.; No. 30, 3.95c.; No. 28, Painted Roofing Sheets, $1.75 per square, and Galvanized Roofing Sheets, No. 28, $3.10 per square, for 2½-in. corrugations. These prices are subject to a rebate of 5c. per 100 lb. to the large trade under the usual conditions, jobbers charging the usual advances for small lots from store.

Tin Plate.—New demand for Tin Plate is about over for this year, but a fair amount of tonnage is still going out from the mills on specifications against contracts. The leading interest is operating to about 40 per cent., and some of the independent mills are running to only about one-half capacity or less. Prices are only fairly steady, some of the Tin Plate mills that are anxious for business cutting prices slightly. We quote $3.70 for 100-lb. Cokes, 14 x 20, f.o.b. Pittsburgh, terms 30 days, less 2 per cent. off for cash in 10 days, this price being subject to the usual rebate of 5c. per base box in large lots.

Hoops and Bands.—Not much new business is being placed. A fair amount of tonnage is going out from the mills on specifications against contracts. It is said regular prices are being maintained, as follows: Steel Hoops, 1.80c., base, full Hoop card prices; Steel Bands, 1.40c., base, half Steel card extra, all f.o.b. cars, Pittsburgh, in carload lots, for delivery during 1908.

Iron and Steel Bars.—Fresh orders and specifications against contracts have shown some betterment in the past week or two, a feature of the market being that implement makers and other interests closely affiliated to the railroads are now sending in liberal specifications for prompt shipments. We are advised that prices on both Iron and Steel Bars are being well maintained, and also that the demand for Iron Bars is a little better. We quote Iron Bars at 1.40c., base, for Pittsburgh delivery, and 1.35c., base, for Western points, to which freight is added, except Chicago, the price for which is 1.50c., delivered. We quote Steel Bars at 1.40c., Pittsburgh, for base sizes.

Merchant Steel.—The makers of Shafting adopted new discounts last week, which are as follows: 57 per cent. off

in carloads, 52 per cent. in less than carloads, delivered in base territory. Some of the agricultural interests have recently placed large contracts for Shafting on the agricultural basis. Fall work for implement and wagon builders is now opening up, and this is expected to bring about more new business and better specifications on Tire and other Steels used by these interests. We quote: Smooth Finished Machinery Steel, 1.80c. to 1.90c.; Flat Sleigh Shoe, 1.75c. to 1.85c.; Cutter Shoe Steel, 2.15c. to 2.25c.; Toe Calk, 1.90c. to 1.95c.; Railroad Spring Steel, 1.60c. to 1.75c., the higher price being for Pennsylvania Railroad analysis. Carriage Spring Steel is 1.80c.; Tire Steel, Iron finish, 1½ x ½ in. and heavier, 1.40c.; under 1½ in., 1.55c. Planished Tire Steel is 1.60c., all f.o.b., at mill.

Merchant Pipe.—New business, especially on the larger sizes of Pipe, is showing a slow but steady gain, and on the lap weld sizes, say above 3 in., the Pipe mills are fairly well filled up, but on the but weld sizes have only a fair amount of tonnage on their books. No large oil or gas line contracts have been placed in the past week. Prices on Steel Pipe are, on the whole, being maintained, but on Iron Pipe are being shaded to some extent. Discounts on Steel Pipe, ¾ to 6 in., to the large trade are now 76 and 5 per cent. off list. Regular discounts are as follows:

Merchant Pipe.

	Jobbers, carloads, Steel.	
	Black.	Galv.
	%	%
⅛ to ¼ in	67	51
⅜ in	69	55
½ in	71	59
⅝ to 6 in	75	65
7 to 12 in	72	57
Extra strong, plain ends:		
¼ to ⅜ in	60	48
½ to 4 in	67	55
4½ to 8 in	63	51
Double extra strong, plain ends:		
½ to 8 in	56	45

Discounts on Genuine Iron Pipe are as follows:

	Black.	Galv.
	%	%
⅛ to ¼ in	65	..
⅜ in	67	53
½ in	69	57
¾ to 6 in	73	63
7 to 12 in	70	55
Extra strong, plain ends:		
⅛ to ⅜ in	58	46
½ to 4 in	65	53
4½ to 8 in	61	49
Double extra strong, plain ends:		
½ to 8 in	54	43

Boiler Tubes.—Signs of some buying of Locomotive Tubes by the railroads are seen, but as yet their orders are for actual needs and mostly for repair work on motive power equipment. The demand for Merchant Tubes is quiet and mostly in small lots for actual needs. Regular discounts on Merchant Tubes in small lots, on which an extra 5 per cent. is allowed in carloads, but which discounts are being shaded, are as follows:

Boiler Tubes.

	Iron.	Steel.
1 to 1½ in	42	47
1¾ to 2¼ in	42	59
2½ in	47	61
2¾ to 5 in	52	65
6 to 13 in	42	59

2½ in. and smaller, over 18 ft. long, 10 per cent. net extra.
2¾ in. and larger, over 22 ft. long, 10 per cent. net extra.

Railroad Spikes.—On the smaller sizes of Spikes some of the mills are well filled up and have two to three weeks' work ahead, but for Railroad Spikes the demand is quiet. The Great Northern Railroad is in the market for a fairly large quantity of Railroad Spikes, a local concern having its inquiry for 2000 kegs. We quote: Standard sizes, 4½ x 9-16 in., at $1.70, and the smaller sizes at $1.80 per 100 lb. in carload and larger lots, with an advance of 5c. per 100 lb. for less than carload, f.o.b. Pittsburgh.

Spelter.—The Spelter trade is showing betterment, both in inquiry and prices. We quote prime grades of Western at $4.60, East St. Louis, equal to $4.72, Pittsburgh.

Iron and Steel Scrap.—The market does not show any betterment in demand and prices continue weak. Large consumers are pretty well covered for some time ahead and are not in the market, except at prices lower than the dealers are willing to name at this time. We quote Heavy Steel Scrap, for Pittsburgh, Sharon, Steubenville, Follansbee and Monessen delivery, at $14.25 to $14.50, while Heavy Steel Scrap, for hand charged Open Hearth furnaces, and for pieces weighing 10 lb. minimum and 300 lb. maximum, is $1 a ton higher. Dealers quote on other grades of Scrap as follows: Cast Iron Borings, $8.75 to $9; Bundled Sheet Scrap, $12.25 to $12.50; No. 1 Cast Scrap, $14.25 to $14.50; No. 1 Railroad Wrought, $15 to $15.25; No. 1 Busheling Scrap, $13.50 to $14; No. 2, $10 to $10.25; Sheet Bar Crop Ends, $17.50 to $18. There is a heavy demand for Iron Axles, and this is the only product on the whole list that has advanced in price. We quote these at $22 to $22.50, and they are firm. Steel Axles are $19; Low Phosphorus Melting Stock, $18.50 to $19; Rerolling Rails, $16 to $16.25; Machine Shop Turnings, $9.50 to $9.75; Railroad Malleable, $14; Grate Bars, $12.25 to $12.50; Old Car Wheels, $14.50 to $14.75, all in gross tons.

Coke.—Recently printed figures show that last week out of 37,340 ovens in the Upper and Lower Connellsville regions 18,428 were active and 19,042 idle, the estimated output being 200,823 tons. This is an increase of nearly 5000 tons over the previous week and nearly 70,000 tons over the first week of April last, when the output of both regions was only 132,000 tons. Prices continue very low, strictly Connellsville Furnace Coke for spot shipment being offered down to $1.50 a ton at oven, about $1.65 for balance of this year, and $1.75 for delivery through the first half of next year. Strictly Connellsville 72-hr. Foundry Coke for spot shipment is held at about $1.90 to $2, at oven, while other makes of Foundry Coke are offered as low as $1.75, at oven.

Cleveland.

CLEVELAND, OHIO, September 8, 1908.

Iron Ore.—Shipments from the upper lake ports for the season up to September 1 show a falling off of 12,356,616 tons, as compared with the same period last year. The movement in August was 4,749,655 tons. The shipments last year from September 1 to the close of navigation were 16,947,200 tons. It is not expected that the September shipments will be much larger than the August movement, and it is possible that they may show some falling off unless there is an improvement in the demand for Ore in the next week or two. Ore firms have been rushing shipments forward as soon as sales were made, and when orders are filled there will be a let-up in shipments from some of the properties unless more Ore is sold. Some stock piles at the mines were cleaned up last month, and all the Ore from some others will be shipped early this month. Owing to the improvement in general conditions which has resulted in a little more activity in the movement of Ore, the estimates of the tonnage to be brought down during the season, that were made earlier in the year, have been revised, and it is now believed that the total shipments may reach 23,000,000 tons. Many of the Ore men did not look for a movement of over 20,000,000 tons. The market has been very quiet the past week. While not much activity is expected, a number of consumers must buy some Ore before the close of the season. Prices at Lake Erie docks, per gross ton, are as follows: Old Range Bessemer, $4.50; Mesaba Bessemer, $4.25; Old Range non-Bessemer, $3.70; Mesaba non-Bessemer, $3.50.

Pig Iron.—Sales aggregating 13,000 tons of Foundry and Malleable Iron were made by a local interest during the week. The purchasers were consumers in the Central West. Some of the sales were for deliveries the balance of the year and others were for deliveries extending through the first quarter of next year. The price ranged from $15.25 to $15.50, at furnace, for both No. 2 Foundry and Malleable. The three largest lots sold were 5000 tons of Foundry, 3000 tons of Foundry and 2000 tons of Malleable. Outside of these sales the market is quiet. A local interest reports the sale of one 500-ton lot of No. 2 Foundry and a few smaller sales, but the demand at present is light, no inquiries of any size pending. Similar reports are made by Valley interests. Prices remain stationary. No. 2 Foundry is being generally quoted at $14.50, Valley furnace. Local furnaces quote No. 2 Foundry at $15 to $15.25, the latter price being for local delivery. The former price would probably be shaded for outside shipment. There is an occasional inquiry for Foundry Iron for next year's delivery, but some of the furnace interests are not willing to sell that far ahead at prevailing prices. Shipping orders for Foundry Iron on contract are fairly good, showing some improvement, but the melt in this territory is improving but slowly. The Bessemer and Basic Iron market is still quiet. The stack of the Cleveland Furnace Company, which has been idle since April, was blown in on Foundry Iron September 4. The new furnace that this company is building will be ready to blow in about the first of the year. For prompt shipment and for the balance of the year we quote, delivered, Cleveland, as follows:

Bessemer	$15.90 to $16.40
Northern Foundry, No. 1	15.50 to 15.90
Northern Foundry, No. 2	15.25 to 15.50
Northern Foundry, No. 3	14.90 to 15 25
Southern Foundry, No. 2	16.35 to 16.85
Gray Forge	14.40 to 14.65

Coke.—Some demand is noted for Foundry Coke, but the Furnace Coke market is dull. We quote Standard Connellsville Furnace Coke on contract for the balance of the year at $1.60 to $1.75, at oven, and 72-hr. Foundry Coke at $2 to $2.25, at oven, the sale of a small tonnage being reported at the latter figure for deliveries extending over the first quarter of 1909.

Finished Iron and Steel.—No important change has developed in the general situation, which continues fairly satisfactory. Not much is turning up in the way of new business, but specifications on contracts are still coming in

in satisfactory volume from a large percentage of consumers that are under contract, the demand being the heaviest from the implement makers. The demand is larger for Steel Bars than for other lines, but there is a fair volume of orders for Structural Material and some improvement in the demand for Plates. A large share of the orders on contracts are for car lots. Some new Steel Bar and Structural contracts have been closed, and fairly good specifications are coming in from Structural shops and bridge builders. There is an improvement in the demand for Shafting, and mills have received some good specifications for Chain Rods. Mill agents have received authority to make contracts for Plates and Structural Shapes for deliveries extending until July 1, 1909, at the present prices. Contracts for these materials had been limited to January 1, and many consumers have urged that the deliveries be extended until the middle of next year. The extension is expected to result in a little more activity in Plate and Structural contracts. At a meeting of the leading Bolt and Nut makers held in Niagara Falls last week an agreement was reached establishing the price of Bolts and Nuts. The market had been wide open for several months, and as a result of the strong competition some very low prices had been made. The new prices agreed upon are a fair average of the recent quotations, being somewhat higher than the lowest quotations that have been made. As the price cutting was done by the larger manufacturers who have taken part in the agreement, it is believed that the new scale of prices will be maintained and a stop put to ruinous competition. The demand for Bolts and Nuts shows some improvement. The American Shipbuilding Company has given the Carnegie Steel Company specifications for 500 tons of Plates and Structural Shapes for the two new lake boats to be built for the Pittsburgh Steamship Company. Other specifications for these boats are expected soon. The secretary of the Board of Public Service, Cleveland, will receive bids September 21 for 3000 tons of Cast Iron Pipe and 220 tons of special and miscellaneous Castings for the Water Department. Because of the low prices at which the city recently secured Cast Iron Pipe, it was decided to make an additional purchase for future needs. The Alliance Gas & Power Company, Alliance, Ohio, has placed an order for 80,000 ft. of 6, 8 and 10 in. Gas Pipe, a large part of which will be used in connecting the city with an outside Pipe line. The contract amounted to about $40,000. The contract for the erection of a concrete bridge over Rocky River has been awarded by the Cuyahoga County Commissioners, Cleveland, to Schillinger Brothers, Columbus. The work will require probably 500 tons of Structural Material and reinforcing Bars. Jobbers report a fair volume of orders and an increase in the demand from consumers outside the city for quick shipment from warehouse. We quote: Iron Bars, 1.45c., Cleveland, for car lots; Steel Bars, 1.50c., Cleveland, for car lots, half extras; Beams and Channels, 1.70c., base, Cleveland, and Plates, ¼-in. and heavier, 1.70c., Cleveland. We quote Sheets, mill shipments, car lots, Cleveland, as follows: Blue Annealed, No. 10, 1.90c.; Box Annealed, No. 28, 2.60c.; Galvanized, No. 28, 3.65c. Jobbers quote Iron and Steel Bars out of stock at 1.65c. to 1.70c. Beams and Channels from warehouse are 2c., and Plates, ¼-in. and heavier 1.90c. Warehouse prices on Sheets are as follows: Blue Annealed, No. 10, 2.10c.; Box Annealed, No. 28, 2.70c.; Galvanized, No. 28, 3.80c. Warehouse prices on Boiler Tubes, 2¾ to 5 in., are 64 per cent. discount, and on Black Merchant Iron Pipe, base sizes, 71 per cent. discount.

Old Material.—The demand for all kinds of Scrap is dull and prices are easier. The weakness is more apparent in Heavy Melting Steel than in other grades owing to the falling off in the demand, and the quotation is from 50c. to 75c. a ton lower than last week. The majority of dealers who have been holding up prices for several weeks appear willing to make concessions when they have an opportunity to make sales. Consumers are buying only in small lots for immediate needs, there being no inquiries for large quantities for extended deliveries. The railroad offerings this week include 1000 to 1500 tons by the Lake Shore and 5000 tons by the Baltimore & Ohio. In the list of the latter road is 2500 tons of Old Rails. Dealers' prices to the trade, per gross ton, f.o.b. Cleveland, are as follows:

Old Steel Rails	$14.50 to $15.00
Old Iron Rails	17.00 to 17.50
Steel Car Axles	18.00 to 18.50
Old Car Wheels	15.00 to 15.50
Heavy Melting Steel	13.75 to 14.00
Relaying Rails, 50 lb. and over	22.00 to 23.00
Railroad Malleable	13.25 to 13.75
Agricultural Malleable	12.00 to 12.50
Light Bundled Sheet Scrap	9.50 to 10.00

The following quotations are per net tons, f.o.b. Cleveland:

Iron Car Axles	$17.50 to $18.50
Cast Borings	7.00 to 7.50
Iron and Steel Turnings and Drillings	8.00 to 8.50
Steel Axle Turnings	8.50 to 9.00
No. 1 Busheling	12.00 to 12.50
No. 1 Railroad Wrought	13.50 to 14.00
No. 1 Cast	12.00 to 12.50
Stove Plate	10.00 to 10.50
Bundled Tin Scrap	8.00 to 9.00

Cincinnati.

CINCINNATI, OHIO, September 9, 1908.—(*By Telegraph.*)

While the prices of Finished products are quite well maintained and Pig Iron has shown no recession, it is felt that the month will bring some cuts all along the line, not only because of the political situation, but because of circumstances which affect production and demand. The settlement of the Coal strike in Alabama is quite certain to produce an effect on prices. A number of new furnaces are to be blown in in the South, but consumption does not improve as fast as expected, there being practically no sale to the jobbing foundry trade. Aside from the Pipe companies, stove foundries and agricultural implement manufacturers, who have all bought for their last quarter needs, little else in the way of demand is in sight. Scrap dealers are still in control of the market, but there is little demand in this section from mills. Plenty of money is available for improvements, and some buildings in which Steel and concrete will be used in considerable quantities are in various stages of preparation.

Pig Iron.—The market is about stationary in price, with, if anything, a trifle less demand than last week. The Southern producers maintain their independent attitude, and some of the largest producers are content to be considered out of the market for the balance of the year. Some idle Tennessee stacks are apparently satisfied that this is a good market to blow in on, and one Citico and one Rockwood are down for early activity. Coke shipments are on the way for the latter furnace. There is still a demand for Forge and other low grade Irons, which has a tendency to stiffen the price on those grades. The furnace of the Jackson Iron & Steel Company, which was scheduled to go into blast some time ago, is now definitely announced to blow in on October 1. Some purchases of Coke have been made, and other inquiries are out for the balance of the year. There is some demand for Bessemer, and but little for Basic. Bessemer is quotable in this market at about $15.25, at furnace. Eight per cent. Silicon is still selling at $18.50, at furnace. The largest Pipe interest bought last week for its Chattanooga plant about 3500 tons, 500 of which is said to have come from this market, at $12.50, Birmingham, the balance from one of the Tennessee furnaces, at a price said to have been shaded considerably. There is an inquiry here from Chicago territory for 2000 tons of Forge. The quoted price is about $11.25, Birmingham. There is also an inquiry from a Southern consumer for 2000 tons of Mill Iron for delivery over balance of the year. There are two or three inquiries of fair size for Malleable. One of 1300 tons, October to March delivery, was declined at $14.75. Another offer on 600 tons of Malleable at $15, at furnace, is expected to go through to-day. Another of 500 tons at the same figure was declined. This was to go into Indiana territory. A Chicago melter is feeling this market for about 600 tons of 10 per cent. Silicon for September and October delivery. An inquiry here is for about 2000 tons each of 4 to 5 per cent. Silicon, and No. 2 Foundry for delivery over the last quarter and the first half into Michigan territory. The new furnace of the Hamilton Iron & Steel Company at Hamilton, Ohio, is shipping Iron on contract, and correspondence at the Cincinnati office of the company indicates that it is of approved Northern quality. For early delivery and balance of the year, we quote, f.o.b. Cincinnati, the freight rate being $3.25 from Birmingham and $1.20 from the Hanging Rock District, as follows:

Southern Coke, No. 1	$16.00 to $16.50
Southern Coke, No. 2	15.50 to 16.00
Southern Coke, No. 3	15.00 to 15.50
Southern Coke, No. 4	14.75 to 15.25
Southern Coke, No. 1 Soft	16.00 to 16.50
Southern Coke, No. 2 Soft	15.50 to 16.00
Southern Coke, Gray Forge	14.25 to 14.75
Ohio Silvery, 8 per cent. Silicon	19.70
Lake Superior Coke, No. 1	16.70 to 17.20
Lake Superior Coke, No. 2	16.20 to 16.70
Lake Superior Coke, No. 3	15.70 to 16.20
Standard Southern Car Wheel	22.25 to 22.75
Lake Superior Car Wheel	21.75 to 22.25

(*By Mail.*)

Coke.—It is a trifle early to note any change in the market occasioned by the settlement of the strike difficulties in Alabama, but sellers are convinced that the termination of the trouble will bring about a halt in the recent rapid rise in price. Of course this relates particularly to the Furnace product. Ovens are nearly all under contract for deliveries the balance of the month into the Alabama field, and some until the close of the year. A reduction in the price, therefore, is not anticipated before next month. Virginia Furnace Coke is quotable in this market at $1.85 to $2, at oven; Foundry, $2.10 to $2.25. There is practically no change in the Connellsville product. Furnace Coke for spot shipment is still obtainable at $1.55 to $1.85, according to period of delivery specified. Foundry (72 hr.) is selling at $2 to $2.25.

Finished Material.—Those products which enter into railroad work are a little more active, but there is no change in price. Specifications are considerably better in Nuts, Bolts, Turnbuckles and the like. Stores are selling in a little

larger quantities, and there is a little better demand for both Iron and Steel Bars. Dealers' prices to the trade, f.o.b. Cincinnati, are as follows: Iron Bars, carload lots, 1.65c., base, with half extras; small lots from store, 1.85c., base, half extras; Steel Plates, carload lots, 1.75c., base, with half extras; small lots from store, 1.85c., base, half extras; Base Angles, carload lots, 1.85c., base; small lots from store, 2.10c.; Beams, Channels and Structural Angles, 1.85c., base; small lots from store, 2.10c.; Plates, ¼-in. and heavier, carload lots, 1.85c.; small lots from store, 2c.; Blue Annealed Sheets, heavy, No. 16, carload lots, 2.15c.; small lots from store, 2.50c.; No. 14, carload lots, 2.05c.; small lots from store, 2.40c.; No. 10 and heavier, carload lots, 1.95c.; small lots from store, 2.20c.; No. 12, carload lots, 2c.; small lots from store, 2.30c.; Sheets (Light), Black, No. 28, carload lots, 2.65c.; Galvanized Sheets, No. 28, carload lots, 3.70c.; Steel Tire, 4-in. and heavier, carload lots, 1.95c.; Plates, 3-16 and No. 8, carload lots, 2c.; small lots from store, 2.20c.

Old Material.—Dealers are firm on prices and in some lines are urging an advance. Their business is principally with outside points, and it is still largely a dealers' market. Mills in this section are taking Scrap on contract, but not making any new deals. We quote dealers' prices to the trade as follows, f.o.b. Cincinnati:

No. 1 R. R. Wrought, net ton	$11.75 to $12.75
Cast Borings, net ton	5.00 to 5.50
Heavy Melting Steel Scrap, gross ton	12.50 to 13.00
Steel Turnings, net ton	6.00 to 7.00
No. 1 Cast Scrap, net ton	12.00 to 13.00
Burnt Cast, net ton	8.00 to 9.00
Old Iron Axles, net ton	16.00 to 17.00
Old Iron Rails, gross ton	14.00 to 15.00
Old Steel Rails, short, gross ton	12.50 to 13.50
Old Steel Rails, long, gross ton	12.00 to 13.00
Relaying Rails, 56 lb. and up, gross ton	20.00 to 21.00
Old Car Wheels, gross ton	12.50 to 13.00
Low Phosphorus Scrap, gross ton	13.00 to 14.00

Buffalo.

BUFFALO, N. Y., September 8, 1908.

Pig Iron.—The market has been exceedingly quiet, almost stagnant. The lack of active business has not affected prices, however, which continue firm as follows, f.o.b. Buffalo:

No. 1 X Foundry	$16.00 to $16.50
No. 2 X Foundry	15.50 to 16.00
No. 2 Plain	15.00 to 15.50
No. 3 Foundry	14.75 to 15.25
Malleable Bessemer	16.00 to 17.00
Gray Forge	14.75 to 15.00
Charcoal	20.00 to 20.50

Finished Iron and Steel.—A noticeable lull in the placement of orders has occurred, no business of any considerable tonnage coming out. Inquiries are being received in fairly good volume, however, indicating that the lapse in new business will be only temporary.

Old Material.—The Scrap market remains practically in the same condition as last week, quiet but firm, with only small tonnages being taken by consumers. We quote dealers' prices to the trade as follows, f.o.b. Buffalo:

Heavy Melting Steel Scrap	$14.25 to $14.75
No. 1 Railroad Wrought	16.00 to 16.50
No. 1 Railroad and Machinery Cast Scrap	14.75 to 15.25
Old Steel Axles	17.00 to 17.50
Old Iron Axles	19.50 to 20.00
Old Car Wheels	15.50 to 16.00
Railroad Malleable	13.50 to 14.00
Boiler Plate	12.00 to 12.50
Stove Plate	12.50 to 13.00
Locomotive Grate Bars	11.50 to 12.00
Pipe	11.50 to 12.00
Wrought Iron and Soft Steel Turnings	8.00 to 8.50
Clean Cast Iron Borings	6.75 to 7.25
No. 1 Busheling Scrap	12.50 to 13.00

Cast Iron Pipe.—Knight & Hopkins, consulting engineers, 101 West Dominick street, Rome, N. Y., are preparing plans and specifications for about 6 miles of 30-in. Cast Iron Pipe, to be laid between Stokes, N. Y., and Rome, N. Y., by the Board of Water and Sewer Commissioners. Bids will be called for by this board at Rome, N. Y., in about three months.

A. M. Byers & Co., Inc., Pittsburgh, will start work this week on the erection of their new puddling and muck bar mills at Girard, Ohio. For use in this plant, a contract has been awarded to the George A. Hogg Iron & Steel Foundry Company, Pittsburgh, for two 24,000 lb. alligator shears, one 38-in. roll lathe, and one 9 x 15-in. ore crusher. Each of these machines will be operated by individual motors, to be supplied by the George A. Hogg Company. The puddling mill will have 42 furnaces, and there will be two skelp mills. The finished product is to be used in making iron pipe at the company's Pittsburgh mills.

The plant of the New Castle Stamping Company, New Castle, Pa., will resume to partial capacity this week. It will be operated by George W. Johnston, receiver.

New York.

NEW YORK, September 9, 1908.

Pig Iron.—Locally, there has been a moderate volume of business, the market remaining steady. Production of Pig Iron, as shown in our monthly report, is increasing. We quote, at tidewater, Northern No. 1 Foundry, $17.25 to $17.75; No. 2 Foundry, $16.75 to $17, and No. 2 Plain, $15.75 to $16.25. Alabama Irons are quoted $17.50 to $17.75 for No. 1 Foundry, and $16.75 to $17.25 for No. 2 Foundry.

Steel Rails.—Scattering lots have been sold in the week by Pittsburgh and South Chicago mills, but the only pending business entitled to mention is 4000 tons for the New Haven Railroad. Open Hearth Rails are specified, and it is expected that the business will be divided between the Bethlehem and Steelton mills.

Structural Material.—The amount of work pending preserves the encouraging aspect of the Structural situation, but it is to be said that from the standpoint of the prices secured there is no particular improvement. Sales of plain material to merchant interests cover only early future wants, and the time of liberal contracting and the carrying of large stocks in that department of the business is a good many months ahead. Locally a contract of immediate interest is that for 3500 tons of Steel and Cast Iron columns for the Lorillard warehouse at Marion, Jersey City. A local foundry company is reported to have the business, but there is also some discussion of reinforced concrete for this structure. The Kentucky River bridge over the Cincinnati, New Orleans & Texas Pacific, on which bids were asked a good many months ago, is up again. About 10,000 tons will be required, according to the design now under consideration. A 600-ton viaduct has been let at Spokane, Wash., and in Washington County, Pennsylvania, a 1500-ton highway bridge is about to be placed. The board of freeholders of Hudson County, New Jersey, is again asking bids on a bridge over the Hackensack, which will require 5000 to 6000 tons. We quote, as heretofore, on mill shipments, tidewater deliveries: Beams, Channels, Angles, and Zees, 1.76c.; Tees, 1.81c. On Beams, 18 to 24 in., and Angles, over 6 in., the extra is 0.10c. From store Structural Material cut to length, is sold at about 2¼c.

Bars.—Greater strength is shown in Bar Iron, which is due partly to a somewhat improved demand and partly to the higher range of prices on Old Material. Best Refined Bars, to meet specifications of manufacturing consumers, are now quoted at 1.56c., tidewater, while Bars of ordinary quality are held at 1.46c. to 1.51c., tidewater. Steel Bars are maintained at 1.56c., tidewater.

Plates.—The local demand shows practically no improvement, as the boiler and tank shops are still running on slack time with only a slight demand for new work. Prices are firmly held as follows, at tidewater, for Standard Sized Plates: Sheared Plates, 1.76c. to 1.86c.; Flange Plates, 1.86c. to 1.96c.; Marine Plates, 2.16c. to 2.26c.; Firebox Plates, 2.65c. to 3.50c., according to specifications.

Cast Iron Pipe.—New business is light, few orders now being received for small lots. As it is so late in the season, the manufacturers are not anticipating the closure of much further business for fall delivery. Carload lots of 6 in. are quoted at $23.50 to $24.50, tidewater.

Old Material.—The market generally has been somewhat more active, a better demand coming from a varied line of consumers who are buying what they can get at current prices, but are strenuously resisting the advances asked for by many dealers. The demand has covered No. 1 Railroad Wrought, Heavy Melting Steel Scrap, Wrought Pipe, Heavy Cast Scrap and Stove Plate. Wrought Pipe is especially scarce, which is due to the fact that most of the yards are shearing it, to be shipped as Steel Scrap. Railroad Wrought is also in limited supply. While the demand for Cast Scrap is somewhat light from the foundries making heavy castings, a good trade is enjoyed among those making a general range of Light Castings. The demand for Old Steel Rails, which was quite brisk for a couple of weeks, has fallen off to some extent. We quote as follows, per gross ton, New York and vicinity:

Old Girder and T Rails for melting	$11.50 to $12.00
Heavy Melting Steel Scrap	11.50 to 12.00
Old Steel Rails, rerolling lengths	14.00 to 14.50
Relaying Rails	22.50 to 23.00
Old Iron Rails	16.50 to 17.00
Standard Hammered Iron Car Axles	18.50 to 19.00
Old Steel Car Axles	15.50 to 16.00
No. 1 Railroad Wrought	15.00 to 16.00
Iron Track Scrap	12.00 to 13.00
No. 1 Yard Wrought, long	14.00 to 14.50
No. 1 Yard Wrought, short	12.50 to 13.50
Light Iron	7.00 to 7.50
Cast Borings	7.50 to 8.00
Wrought Turnings	8.50 to 9.00
Wrought Pipe	11.00 to 11.50
Old Car Wheels	14.50 to 15.00
No. 1 Heavy Cast, broken up	13.50 to 14.00
Stove Plate	11.50 to 12.00
Locomotive Grate Bars	11.50 to 12.00
Malleable Cast	12.50 to 13.00

Ferroalloys.—While $43, seaboard, can be done for

large lots of Ferromanganese, the general price for small lots is $44. The price of 50 per cent. Ferrosilicon is unchanged at $70, makers' works. These prices only apply for delivery the remainder of the year, a few orders for 1909 delivery having been taken at higher figures.

Metal Market.

NEW YORK, September 9, 1908.

Pig Tin.—It is possible by careful study to note the improvement in the Tin trade over last week, but it has been so slight as to be almost negligible were it not for the fact that it continues after the better demand noted a week ago. Contrasting the demand, especially from the interior, now with that of a fortnight ago shows clearly that trade has improved, but still much is to be desired. Prices are irregular, and futures are much higher than spot, showing the abundance of metal here. One reason for the over supply at this time is that the cargo of the Verona was discharged last week, much earlier than expected. Apparently, the leading consuming interest in this country is now a seller of Pig Tin. Prices during the week have been as follows:

	Cents.
September 2	28.85 to 29.00
September 3	28.90
September 4	28.70 to 28.80
September 5	28.75
September 8	28.75
September 9	28.60

Friday was the best day of the week, and probably 75 to 100 tons were disposed of. The arrivals so far this month have been large, amounting to 630 tons, and the afloats are likewise large, amounting to 1615 tons. London market closes to-day at £130 15s. for spot, and £132 for futures.

Copper.—Conditions in the Copper trade show some improvement. Melting by domestic consumers is greater, but the buying has fallen off to a large degree. Prices are correspondingly lower, and resale lots of Electrolytic can be had for September and October delivery at 13.50c. cash, New York. Later deliveries are held much firmer, and it is impossible to do anything better than 13.75c. for November and December shipment or delivery. These resale lots have been aggressively pushed on the market, and sellers were anxious to dispose of September and October metal. Whether this refers simply to a little metal left over from sales by selling companies, or is in the nature of resales from consumers is difficult to determine. Lake Copper is closely held at 14c. by producers, but resale lots have been sold this week at 13.87½c. It is possible, too, that even slightly lower figures might be made for good lots. The domestic buying is not what it should be or what it was last month. It is possible that much more metal has been sold under cover than is generally believed. The market, however, appears to be in a better technical position because some, at least, of the metal hanging over the market has been disposed of. Exports have fallen off, being but 3338 tons up to September 8. The London market is higher than last week at £61 for spot and £61 15s. for futures.

Pig Lead.—The market is firm, and without change. In New York spot Lead can be had at 4.60c., but trade is dull. The leading producer is selling shipment Lead in 50-ton lots at the old price of 4.60c. The St. Louis price is unchanged, at 4.45c. to 4.50c.

Spelter.—The surplus stock of metal which was bearing so heavily on the market a few weeks ago has been partially absorbed, and this has given the market a firmer tone. Although buying is still conspicuous by its absence, prices are higher, at 4.75c. to 4.80c., New York, and 4.60c. to 4.70c., St. Louis.

Antimony.—The market continues to lag, there being no animation. Prices are unchanged. Cookson's and Hallett's can be had at 8c. to 8.25c. Outside brands are held at 7.75c. to 8c.

Tin Plate.—Some improvement in the Terne Plate trade is noted, but in general the Tin Plate trade is dull. Prices are unchanged, at $3.89, New York, and $3.70, Pittsburgh, for 100 lb. IC Coke Plates.

Old Metals.—Buyers are accumulating some Scrap, and this perhaps accounts for the stationary prices of Old Metals in the face of declining quotations for Ingot Copper, this, of course, referring to Copper bearing Scrap. Dealers' selling prices are as follows:

	Cents.
Copper, Heavy and Crucible	12.75 to 13.00
Copper, Heavy and Wire	12.50 to 12.75
Copper, Light and Bottoms	11.50 to 11.75
Brass, Heavy	9.25 to 9.50
Brass, Light	7.25 to 7.50
Heavy Machine Composition	12.00 to 12.25
Clean Brass Turnings	8.25 to 8.50
Composition Turnings	9.50 to 9.75
Lead, Heavy	4.20 to 4.25
Lead, Tea	3.85 to 3.90
Zinc, Scrap	3.25 to 3.50

Tests of Open Hearth Steel Rails.

In a paper on "Steel Rails—Manufacture and Failures," read before the Western Society of Engineers, and just published in the journal of that society, P. H. Dudley, of the New York Central Railroad, refers as follows to basic open hearth rails:

"We shall avoid, by the basic open hearth process, as much phosphorus as we now have in our present rails, and probably the brittleness will be less, but so far as wear is concerned that is something which will have to be determined by service tests. The brittleness seems to be less in the basic open hearth steel, unless it runs too high in the carbon or other hardening elements. The metal must be higher in the carbon to get a serviceable rail by the basic open hearth process than is necessary in the Bessemer process, with the use of 0.06 per cent. of phosphorus. I have seen a number of rails rolled of basic open hearth steel in which the carbon ran from 0.65 per cent. to 0.75 per cent., and those rails were tough. However, with a slight increase in carbon running from 0.68 per cent. to 0.78 per cent., in an ordinary section, a great deal of brittleness developed and the rails were not as tough as those with a less amount of carbon. I made for the New York Central Railroad a few thousand tons of basic open hearth rails, rolled from three length ingots and branded A, B and C, commencing with the top of the ingot. All the different letters will be observed for wear. We are putting them in a place where we require great toughness. We will have more reliability, so far as brittleness is concerned, than in the ordinary Bessemer rail with 0.10 per cent. phosphorus."

Other portions of the paper traversed ground generally familiar, but we make some extracts below embodying the results of Mr. Dudley's special investigations:

"The base failures I have described are those of my observation under high speed trains where the temperatures were 20 to 30 degrees below zero F. for several consecutive days. The winter of 1906 and 1907 had the longest protracted periods of low temperatures in many localities that the Weather Bureau has yet recorded, and I did not see more than one or two direct tension breaks, all of the fractures being developments of injuries, strains or defects in manufacture coincident with the combined cold and heavy service. These are technical problems for the rolling mills and the railroads to investigate and solve. The low temperature has two effects upon the ordinary Bessemer steel rails. First, to raise the elastic limit and increase its fragility under shocks. Second, to set up thermal stresses, due to contraction before the ends of the rails slip in the splice bars.

"Each fall in temperature of 1 degree F. sets up a stress of 200 lb. per square inch of the area of the section where the ends of the rails are held firm. The friction of the splice bars per lineal inch of the 80-lb. rail of my sections is 4300 to 4400 lb., and for the 100-lb. splice bars it is 4800 to 5000 lb. One-half of a 36-in. 80-lb. splice bar would hold a tension of 77,000 lb., and the 100-lb. splice bar 86,000 lb. before the ends might slip in the splice bars. The most frequent base breakages are in the periods of low temperatures, and consequently affect the rails laid in cold more than in warm climates.

"The numerous split heads in rails of recent years, called by the trackmen 'piped rails,' and which are found in all brands, occur more in some than in others. When the steel is cast in long ingots, the upper part is not deoxidized as much as the average, and with a well defined exterior envelope not securely connected to the spongy central core. The passing wheel loads cause the metal in the bearing surface to spread laterally and it becomes loosened from the central core underneath. The widening layer of metal eventually checks and splits that of the central core underneath. The surfaces of the vertical split discolor in a short time and are often reported by the trackmen as a flaw or pipe. There are often one or more minute layers of ladle slag—(silicates of manganese)—from the chemical reaction of the recarburizer, one-eighth to one-quarter of an inch under the bearing surface, which permits the metal to spread easily and split the metal underneath, particularly when there are

small seams formed by the closing and elongating of small gas bubbles surrounded by segregated metal. The split may develop at the end, but more often occurs in one or two places in the quarters or centers of the rails. It sometimes starts and breaks from one side of the head and develops toward the center and then across to the opposite side.

"The spattering of the mold in pouring or when a heat must be pricked seems responsible for some split heads; but the teeming of the ingots too quickly after recarbonizing the steel, so that they contain minute globules of silicate of manganese associated with insufficient deoxidized metal, seems to be a greater factor.

"The central core of the upper part of the ingot is often a motley collection of segregates in the insufficiently deoxidized metal which were rejected by the setting steel of the lower portions of the ingot and entrained before rising to the top. Some of the segregates, as ovoid bodies in the ingots, are drawn out in rolling into long cylinders and form the dark streaks in longitudinal etchings of the rails, while the white streaks are generally carbonless iron. The silicates of manganese as globules are drawn out into threads in the section of the rails, resulting in a reduction of the solid volume in the heads, particularly when associated with insufficiently deoxidized metal. The rapid wear, flow of metal and crushing of the rail ends are to be expected from such conditions.

"Pipes in ingots from shrinkage cavities or inclusions of ladle slag or vessel slag, ganister and split heads, would be 'pipes' to the trackmen, but each requires a different metallurgical treatment for correction.

"The consumer is expected to tell the manufacturer when the rails fail, which is but a small part of his privilege and duty; he must investigate and tell the manufacturer the reasons why they fail to meet the conditions of service. Transportation has made such rapid strides during the past two decades on the stiff rails as engineering structures and the demands of the commercial interests for more facilities have been so pressing and insistent, that some things have been done to meet emergencies by both the consumer and manufacturer, obliging both to work nearer the upper margin of capacity than would otherwise have been done. Some manufacturers have shortened by one or two minutes the essential time after recarburizing the heats before teeming the ingots, while the consumer has been obliged to increase the wheel loads, expended tractive effort of the locomotives and speed of his trains to a degree only recently considered possible.

"Two years ago to suggest to the manufacturer that slag was disseminated through the steel in the rail head was met by what he considered just indignation as to the correctness of this statement, but when shown to him he no longer doubts, but takes measures for its elimination. The steel manufacturer has to contend with the storms quite as much as the rail user. The atmospheric moisture will not wash out or submerge the manufacturer's plant, but the amount of moisture which in humid weather will go into the blast furnace will change the character of the product.

"The Bessemer converter uses for the conversion of each ton of metal five-tenths to six-tenths of a ton of air, and whether each cubic foot of air contains 1 or 6 to 8 grains of moisture is felt at once in the Bessemer department and the rail mill by increased difficulties of manufacture not easily surmounted. The 'dry blast' was recently applied to the Bessemer converter at the South Works of the Illinois Steel Company with beneficial results.

"It is gratifying for me to find that from independent investigation the consumer and manufacturer are arriving at the same facts and conclusions, from which mutual benefits will result."

The September Crop Report.—The government's September crop report, issued September 8, indicated a loss in corn, oats, and spring wheat from the estimates made on August 1. It gives the condition of corn on September 1 as 79.4, the lowest for that month in five years, and a reduction of 3.1 per cent. from the August estimate. This represents a loss of 125,000,000 bushels, and points to a crop of 2,595,000,000 bushels. The estimate on September 1 last year was 2,540,000,000 bushels, and the actual corn crop for 1907 was 2,780,000,000 bushels. The condition of spring wheat is 77.6 per cent, against 80.7 last month, and 77.1 on September 1 last year. The indicated crop of 240,856,000 bushels compares with 222,264,000 bushels indicated in September, 1907. The indicated oat crop is 825,908,000 bushels, against 787,275,000 bushels indicated one year ago.

Iron and Industrial Stocks.

NEW YORK, September 9, 1908.

The Stock Exchange having been closed on Saturday and Monday, the transactions of the past week were consequently rather limited and the course of values was not specially significant. Some weakness developed on Thursday of last week, but a change of sentiment manifested itself on Friday and prices advanced, continuing to retain their strength on Tuesday, except in the case of Locomotive common. The range of prices on active iron and industrial stocks from Thursday of last week to Tuesday of this week was as follows: United States Steel common 45⅞ to 48⅛, preferred 109¾ to 112⅛; Bethlehem Steel common 23 to 23½, preferred 50 to 52; Car & Foundry common 40¼ to 40⅞, preferred 104 to 105; Locomotive common 51⅝ to 55½, preferred 105 to 105½; Steel Foundries, new, 31 to 32; Cambria Steel 37¼ to 38¾; Colorado Fuel 35 to 37; Crucible Steel common 7, preferred 49 to 49¾; Pressed Steel common 33¾ to 35, preferred 95½ to 98; Railway Spring common 42½; Republic common 23 to 24, preferred 79 to 82; Sloss-Sheffield common 63 to 64½; Cast Iron Pipe common 25⅜ to 26½, preferred 71; Can common 5⅞ to 6, preferred 62 to 62¼. Last transactions up to 1.30 p.m. to-day are reported at the following prices: United States Steel common 47⅝, ex-dividend, preferred 111½, bonds 101¾; Car & Foundry common 40⅞, preferred 105; Locomotive common 50½, preferred 104½; Colorado Fuel 36¾; Pressed Steel common 34⅞, preferred 94¼; Railway Spring common 42½; Republic common 24, preferred 81½; Sloss-Sheffield common 64; Cast Iron Pipe common 26¾, preferred 71; Can common 5⅞, preferred 62½.

The Longmead Iron Works, Conshohocken, Pa., has made an issue of $175,000 first mortgage 6 per cent. gold bonds, dated July 1, 1908, and maturing in 20 years. The capital stock consists of $400,000 common and $100,000 8 per cent. cumulative preferred.

Dividends.—The Canadian General Electric Company, Ltd., has declared the regular quarterly dividend of 1¾ per cent. on the common stock and a semiannual dividend of 3½ per cent. on the preferred stock, both payable October 1.

The International Silver Company has declared a quarterly dividend of 1 per cent. on the preferred stock, payable October 1.

The American Smelting & Refining Company has declared a quarterly dividend of 1 per cent. on the common stock, payable October 15.

Machinery Requirements of Tamaqua Mfg. Company.

The Tamaqua Mfg. Company, Tamaqua, Pa., will receive bids until September 19 for the following machinery for its new plant: One 26 in. turret head boring, forming and turning lathe, approximate size between chuck and face of turret 47 in., turret, 14 in. diameter, six 2½ in. holes, heavy four jaw independent chuck, to be arranged for direct motor drive; one full universal radial drill, working surface 3 x 4 ft. 3 in., capacity vertical range of arm 2 ft. 10 in., capacity horizontal range of head 2 ft. 5 in., spindle diameter at point of power 2 3-16 in., spindle bored to fit No. 4 Morse taper, to be arranged for direct motor drive; one pipe threading and cutting-off machine, capacity ¼ to 3 in. gas pipe, with dies for threading bolts, to be arranged for direct motor drive; one 30 x 33 in. planer, arranged for direct motor drive; one engine lathe, 36 in., moving over shears 37 in., 18 ft. between centers, arranged for direct motor drive; one engine lathe, 18 in., moving over carriage 10⅜, between centers 6 ft., arranged for direct motor drive; one cold saw cutting-off machine, diameter of saw 26 in., capacity for round stack 7 in., to be arranged for direct motor drive; one pipe threading and cutting-off machine, capacity 2½ to 8 in.; one horizontal floor boring machine, diameter of spindle, 4 in., spindle traverse, 32 in., vertical feed, 46 in., horizontal feed, 72 in., to be arranged for direct motor drive.

The annual meeting of the American Society of Mechanical Engineers will be held in New York December 1 to 4, inclusive. The important feature of the meeting is to be a symposium on machine shop practice.

The Machinery Trade.

NEW YORK, September 9, 1908.

Machinery houses report a slight increase in business the past week; in fact, since the opening of the month an improvement in general conditions has been more noticeable. This upward trend is attributed in some quarters to the close of the summer season and many expect from now on that the demand will slowly increase. Although transactions continue to cover almost wholly small lots or single tools and inquiries of any size are scarce, indications of renewed activity on the part of some of the larger Eastern railroad systems are encouraging. In the trade much is again heard of the railroads coming into the market for mechanical equipment at an early date, the foremost among which are the New York Central and Pennsylvania railroads. The former road will require a great deal of equipment for its West Albany shops, and now has under consideration the purchase of about $45,000 worth of traveling cranes. Bids for these were sent in a week or 10 days ago and contracts are expected to be closed shortly. From one in the trade who keeps posted on the requirements of the Pennsylvania Railroad and who has lately visited that company's shops, we learn that inquiries for machinery from that source in the near future are likely. The Delaware, Lackawanna & Western Railroad has inquiries out for about four machine tools, and it is reported that the Termiskaming & Northern Ontario Railroad, whose purchasing agent is V. T. Bartram, North Bay, Ont., is in the market for a small list of tools.

The large additions being made to the West Albany shops of the New York Central & Hudson River Railroad will necessitate the purchase of considerable machinery in addition to that bought during the last six months. The officials of the road now have under consideration the purchase of a number of traveling cranes, aggregating about $45,000 in value, which we understand are intended for the new erecting shop, 100 x 442 ft., which is now being built. Specifications for these cranes were sent out about three weeks ago, and as all the bids are now in it is expected that they will be tabulated and contracts for the cranes placed within a short time. These inquiries have caused considerable interest among machinery houses, in that it is expected that they will be followed by inquiries for machine tools. In addition to the erecting shops, the new buildings at that point include a large boiler shop.

A complete mechanical equipment will soon be purchased for a sand lime brick plant to be erected at Port Jefferson, L. I., at a cost of about $50,000. The plant, which is to be constructed under the supervision of Frederick L. Smith, industrial engineer, 5 Beekman street, New York, will be built by the Dyett Sand Lime Brick Company, 103 Park avenue, New York, which has recently been incorporated with a capital stock of $300,000, of which $100,000 is 7 per cent. accumulative preferred stock and $200,000 common stock. The main building will be 60 x 220 ft., and the equipment, which will be purchased through the engineering office of Frederick L. Smith, will consist of three 150-hp. horizontal tubular boilers, 150 lb. pressure, one 300-hp. simple engine, 80 lb. pressure; one direct current lighting outfit of 10 hp., feed water heaters, pumps and other power plant accessories, sand dryers, ball and tube mills, mixers, industrial railway equipment, piping, &c. There will also be required the structural steel for the buildings and a 200-ft. wharf will be erected. For the manufacture of brick a new press will be used which is the invention of James H. Dyett. This press, which it is claimed will revolutionize the brick industry, works automatically and turns out 10,000 complete bricks an hour, in comparison with the ordinary presses used, whose output is said to be about 2000 bricks an hour. The plant will have a capacity of 100,000 white bricks in 24 hr. and is to be so constructed that the capacity can be doubled without disturbing the arrangement, the power plant to be installed being of sufficient capacity to take care of an output twice the size of the first installation. The company has secured at Port Jefferson a large acreage of fine white sand and the brick produced is of fine texture, white and smooth. Aside from these presses which the company will have built, all other mechanical equipment used in a modern brick plant will be purchased. The officers and directors are James R. Bateman, president; Frank L. Howson, vice-president; Edward H. Mangels, secretary; George E. Darling, treasurer; Louis Lauer, assistant treasurer; James H. Dyett, general manager; Frederick L. Smith, consulting engineer; Thomas Conyington, counsel; George F. Jones and C. C. Kimball.

The Otis Elevator Company, New York, is having plans prepared for a foundry building 90 x 200 ft., 50 ft. high, of brick and steel construction, to be erected at Locust and Atherton streets, Yonkers, N. Y., in connection with the present plant. Formerly a large part of the castings used at the Yonkers plant were made at its Chicago and other plants, but with the completion of the proposed building the present foundry capacity will be more than doubled and will be sufficient to supply all castings required.

Sayre Brothers, iron and brass founders, Phœbus, Va., have decided to rebuild their plant, which was recently destroyed by fire, and are now working on a temporary structure which they expect to have in operation in a couple of weeks. Plans for the new foundry building have not been entirely completed, but they will call for the erection of a concrete structure, with a main foundry room about 45 x 190 ft. and side floor 19 x 24 ft. on one side only, making the complete building 49 x 190 ft. The new machine and pattern shops will be in separate structures, plans for which have not yet been prepared. For the foundry, aside from small tools, the requirements will be confined to a hand power traveling crane of about 6 tons capacity and 45-ft. span. Later most of the machine shop and pattern shop tools will be replaced. The roofing material to be used on the new foundry building has not yet been fully decided upon, corrugated iron being under consideration.

The W. D. Forbes Company, Hoboken, N. J., is buying the additional equipment it will require for its new shops at New London, Conn., where it intends to move its business in a plant the main building of which is 50 x 200 ft. The marine end of its property at New London, on which are marine railways and buildings for the building and storing of yachts and small boats, has been leased to the New London Marine Iron Works Company, which will operate it in connection with its large plant for taking care of surplus work.

A. Cleaver, president and manager of the Texas Power Company, Stewart Building, Houston, Texas, has inspected a number of large installations of gas engines and producer plants with the view of the installation of 10 1000-hp. producer gas units in the company's new power plant, 30 x 350 ft., with producer room 30 x 150 ft. The company will be in the market for the equipment in about 60 days.

Catalogues Wanted.—The F. L. Calhoun Company, 3019 Boulevard, Jersey City, N. J., contracting machinist, desires catalogues from manufacturers of machinery.

Chicago Machinery Market.

CHICAGO, ILL., September 8, 1908.

Reports from the leading tool dealers indicate that while no notable gains were made in business for August over the previous month, the balances, though slight, were generally on the right side of the account. No important deals are engaging the attention of the trade and the market is dependent, as it has been for a number of months, upon scattered orders from widely diversified sources. Comparatively few orders are being contributed by the larger interests which in ordinary times are conspicuous buyers. Inquiries as to prevalent source of demand disclose the fact that the small and moderate sized shops are furnishing the bulk of the business. Not only are many of these small industries fairly well occupied with work, but quite a number of new industries, of unimportant size individually but in the aggregate not insignificant, are being started. Most of these are located in the West, and a large proportion of them have to do with the manufacture of agricultural machinery and hardware specialties; but each installation requires the purchase of a few tools, which at this time has greater significance than would ordinarily be the case. The demand for second-hand tools is relatively good, but dealers are finding it difficult to maintains stocks for the reason that very few desirable lots are up for disposal. In this respect a marked contrast is shown between the conditions observed in the depression of 1893 and 1894 and those of the present time. Because of numerous failures in manufacturing lines, occasioned by the extreme dullness of that period, considerable quantities of second-hand machinery were thrown upon the market by bankrupt sales, which resulted in a large surplus of good second-hand tools being secured by dealers at bargain prices. No such results have followed the present industrial reaction, since there have been but few commercial wrecks involving the forced sale of any important lots of machinery equipment. This fact in itself is a strong commentary upon the fundamental soundness in the industrial situation, for it may be reasonably assumed that concerns which have withstood the stress of financial stringency and the long period of inactivity and depression may be able with the turn of the tide, which has already set in, to float clear of dangerous shoals.

Yielding to the demands of necessity, the railroads are increasing their purchases of general supplies, and a few small machinery lists have also recently appeared in the market. Dealers are figuring on one including a few tools for the Temiskaming & Northern Ontario Railway, V. T. Bartram, purchasing agent, North Bay, Ont. The Sonora Railway, one of the Harriman lines in Mexico, has recently

purchased a small lot of tools. As a rule, however, the majority of business now finding its way into the market from the railroad shops is comprised of orders for individual tools which are too infrequent to figure conspicuously in the general aggregate.

The Chicago Board of Education has practically completed its purchases for this year of tools and machinery required for the equipment of the high school manual training departments, and it is not likely that its subsequent requirements for this period will include any more than auxiliary supplies and attachments. A list of this kind, including some minor equipment, is now in the hands of the trade for bids which will be closed early next week. The amount of money expended by the board for machinery was this year largely increased by the notable installation in the Lane Manual Training High School, which is now practically completed and will be ready for operation at the beginning of the school term. Unless present plans are modified it will be some time before orders of like importance will again come from this source.

Orders for the machinery required to equip the extension to the plant of the Western Steel Car & Foundry Company, Burnham, Ill., have been placed. Reference was recently made in these columns to the improvement, noting the contemplated machinery requirements. The plate work equipment will be supplied by Jos. T. Ryerson & Son, and includes, besides horizontal punches, vertical punches, shears and other tools, two large multiple punches weighing 115,000 lb. each.

The plant of the Dodgeville Electric Light & Power Company, Dodgeville, Wis., having been taken over by the city of Dodgeville, Wis., the company has decided to erect a new plant and continue operation. The project of establishing an ice and heating plant, to be operated in conjunction with the light and power plant, is under consideration.

The Union Power Company, St. Cloud, Minn., has under construction a new power house for hydro-electric equipment designed to develop 1600 hp. The plant will be located on the dam of the St. Cloud Water Power Company.

For the generation of electrical energy for the operation of its furnace plants at the Nye mines and to supply current for the city of Mayville, the Northwestern Iron Company, Mayville, Wis., is installing alternating current equipment and otherwise remodeling its power plant. Steam will be generated by waste gases from the furnace, thereby reducing the power generative cost to a minimum. The consulting engineer in charge of this work is A. G. McKee.

Quite a number of requisitions for supplies by the United States Reclamation Service for use in the development of its irrigation projects are coming through, and though they include no individual requirements of notable size, they sum up a considerable monthly total. No new undertakings are in immediate prospect, but the enterprises now being installed are of such magnitude that they will necessarily continue to use a large amount of material and supplies.

Philadelphia Machinery Market.

PHILADELPHIA, PA., September 8, 1908.

The market has been interrupted to a considerable extent by the holiday, and the business transacted during the week has been extremely light. Orders have been much scattered and are confined almost exclusively to single tool propositions, and particularly those of the medium and smaller classes. It is expected, however, now that the vacation season has passed that more attention will be given by the trade to the large volume of business which has been held in abeyance for the past month or two, and it is from business of this character that the trade expects an early development of orders.

The railroads, while they have not been heavy buyers, have been placing some business; orders for rolling stock have been somewhat more pronounced and some of the local roads have been making moderate purchases in other directions. The Pennsylvania has given orders for the building of a number of freight locomotives in its own shops at Altoona, while the Philadelphia & Reading has increased the number of working hours at its Reading shops, it being understood that the car shops will go on 53 hr. a week, while the locomotive shops will work five days a week instead of four, as has been recently the case. This increased activity on the part of the railroad shops is considered encouraging by the trade, and while it does not mean immediate business, as far as the machine tool trade is concerned, it is taken as a move in the right direction. The shipyards are also showing some little activity, and although no large work has been taken recently, considerable estimating is being done for various classes of work. The Government has recently opened bids for 10 new torpedo boat destroyers, as well as several colliers, on which the shipyards in this territory have all made bids. Proposals are also being advertised by the Government for a large battleship in which the local shipbuilders are interested and which are to be opened early in November.

Generally speaking, therefore, conditions surrounding the trade are quite favorable for increased activity in the early future. While the immediate improvement exerts to some extent only an indirect influence on the trade, there are several propositions affecting the machine tool interests directly which will no doubt develop either late in the current month or early in October.

Manufacturers report practically unchanged conditions. Special tool builders have taken on some little business, but those making the usual line of standard tools report but little increase in the demand. Foreign trade has been very dull, nothing in the way of requirements covering standard machine tools having come out, although some business has been placed in special equipment of various classes. The trade abroad which a number of manufacturers of power transmission specialties have established is still reported as inactive.

Second-hand machine tool merchants report a rather quiet week. Business has been irregular, due no doubt to the same conditions which have been noticeable in the general machine tool trade. A fair amount of estimating is being done on moderate sized boilers and engines, but the orders develop slowly.

The foundry trade continues to show a slight improvement. Some of the steel casting plants which have been running from 30 to 40 per cent. of their capacities have taken on a little more work, and one plant has booked enough new business to enable it to operate at 50 per cent. for the balance of the year. The absence of railroad and heavy machinery work has held down the output of the steel casting plants to a large extent. Some of the gray iron plants are now working on a better tonnage. A fair amount of municipal work has come out, but the demand for machinery castings is still rather quiet.

The Borough Council of Haddonfield, N. J., has decided to issue $100,000 in bonds for the erection of a municipal water plant. The Water Committee, of which Charles O. Brown is chairman, was authorized to advertise for bids for the construction of the new plant. Proposals will, it is understood, be received by Mayor J. Morris Roberts until October 1.

J. G. Doak & Co., engineers and contractors, have obtained the contract to build a city hall for Trenton, N. J. A four-story building, 80 x 300 ft., with all modern appurtenances, is to be erected costing about $450,000. Work is to be started at an early date.

The Pennsylvania Railroad Company, which recently placed orders for 10,500 tons of pig iron for its Altoona shops, has contracted for materials to be used in the construction of 15 freight locomotives, which will be built in its own shops at Juniata, Pa.

The Montgomery County Commissioners have decided to build a new steel and concrete bridge over Stony Creek at Markley street, Norristown, Pa. Plans and specifications are to be obtained at the commissioners' office in that city, proposals being received until September 26.

The Tropenas Steel Company, New Castle, Del., has completed the work of erecting its main foundry and office buildings and the headquarters of the company has been removed there from this city. The company has decided to go ahead with the additional work planned, and now has specifications out for a pattern and machine shop, 90 x 180 ft., to be built of structural steel and brick. The purchase of the machinery equipment for the plant, we are advised, will be made early in October. It is expected that the plant will be put in operation late in October or early in December.

Proposals will be received until September 29 by the Lighthouse Engineer, Baltimore, for furnishing materials and labor of all kinds necessary for the erection of a light house at Ragged Point, Potomac River, Md.

The Link Belt Company reports a continuation of a fair volume of business. Orders have been more numerous recently and include among others the following: Three orders for sugar conveyors and elevators for export to Cuba; elevating and conveying machinery for parties in Delaware and in Florida; conveyors and elevators for a fuel testing plant and apron conveyor for a coke plant in Pennsylvania; coal crushing machinery for a coal and coke company; special car haul for a coal mine, and a retail coal pocket equipment. Several retail coal pockets, conveyor outfits and locomotive coaling stations have been ordered by New York parties, while coal pocket machinery, car hauls and coal chutes will be furnished parties in the Middle West.

New England Machinery Market.

WORCESTER, MASS., September 8, 1908.

The Labor Day break is more conspicuous than usual, the holiday with many business men extending from Friday until later than Tuesday. The consequence is a marked cessation of business, the inactivity promising to extend through the week. In the machinery trade the majority of

dealers report no appreciable change; improvement if it exists is slight. In one or two cases last week showed a better business than had prevailed, but this is regarded as probably being another instance of spasmodic improvement.

The machine tool builders, however, are noting some genuine improvement, notably on the lighter machinery. Perhaps it might better be put the demand for heavy tools is not so great as for those of medium and lighter sizes. For instance, one company manufacturing lathes and planers is doing better with the former. The shops are starting up after shutdowns, and in a number of instances working forces and hours are being increased. This is more strongly the case with general manufacturing, the increase in volume of orders and of production continuing. Optimism is very general. Those manufacturers whose opinions are usually accepted as most substantial and well considered maintain that improvement should be constant but gradual, reaching a very fair volume by the end of the year. It is the almost universal wish that the return to prosperous conditions will be gradual and wholesome, rather than rapid.

The foundries are busier than they were, but in common with most other branches of manufacturing the betterment is one by comparison only. The foundrymen "talk better;" their observations point to improvement. The pig iron and coke business is dull, practically every foundry being stocked up for the remainder of the year.

The Universal Boring Machine Company, Hudson, Mass., has completed the development of its new boring machine and is receiving orders. The company has been established in its new shop for some time, but is only now beginning to place its machine on the market, desiring to perfect its details to the point of certain manufacturing efficiency. It will be built in one size only for the present, to be known as the No. 1, with a med'um capacity. The shop is 50 x 150 ft., one story, the site containing ample space for enlargement when additional space is desired. A spur track from the Boston & Maine Railroad gives ample transportation facilities. J. N. Lapointe, head of the Lapointe Machine Tool Company, is president and general manager of the new company.

The Wood Turret Machine Company, Terra Haute, Ind., of which Hill, Clarke & Co., Inc., are the New England agents, is to add a ¾-in. machine to its line of Tilted Turret lathes, supplementing the 1 and 1¼ in. sizes. The new machine will have the same mechanical features as the others, including semiautomatic turret operation and automatic continuous bar feed, a new element of design in tools of the type of so small capacity.

The Clarence G. Garrigus Machine Company, Bristol, Conn., is completing its new shop building and will soon occupy it for the manufacture of special machinery. About 25 men will be put to work to begin with, and the force will be increased as the demand shall require it.

The repair shops of the New England railroads are putting on new men, increased activity being strongly marked in some cases. The Boston & Albany division of the New York Central is conspicuous in this change for the better. In common with the railroads all over the country the New England systems have been living a hand to mouth existence in the way of repairs, avoiding everything that could possibly be put off, until the accumulation of work has become rather a serious matter, especially in face of the period when even a shortage of rolling stock is prophesied. The electric railroads have been able to maintain better working forces, yet there are not a few instances where the companies have curtailed in these items of costs. Their supplies, too, have been permitted to fall to the lowest possible point, and they frankly state that they must either enter the market at no distant date or be crippled. The electric roads have come to be very important buyers in the market.

Among recent announcements of proposed enlargements of textile plants are these: Richard Borden Mfg. Company, Fall River, Mass., addition to cotton mill, 80 x 100 ft., and four stories; Brainard & Armstrong Company, New London, Conn., addition to silk mill, 35 x 100 ft., two stories; A. D. Ellis & Co., Monson, Mass., factory, 65 x 120 ft., three stories; dye house, 30 x 75 ft., one story, and office building, 40 x 50 ft., two stories.

The New Haven Foundry Company, New Haven, Conn., has been incorporated in Connecticut, and has established a foundry at 205-209 River street. It will manufacture gray iron castings, making a specialty of sash and elevator weights. Jacob Jordan is president and treasurer, H. M. Wood, secretary, and Samuel Land, manager.

The Weld Mfg. & Supply Company, 79 Milk street, Boston, which has been established several years, has incorporated under Connecticut laws, with capital stock of $25,000. It has a factory at Bridgeport, Conn., where it manufactures automatic wire machines, sheet metal and wire goods, dies and tools for special work and a line of specialties. The incorporators are: George A. Weld, Winchester, Mass.; William G. Walker, Brookline, Mass,, and William M. Morgan, Boston.

The Hampshire Paper Company, South Hadley Falls, Mass., will build a new machine room, 60 x 100 ft., and three stories.

Cincinnati Machinery Market.

CINCINNATI, OHIO, September 8, 1908.

Some of the larger machinery manufacturing establishments have had encouraging results from late August inquiries, and this is particularly true of those which are in correspondence with automobile manufacturing concerns. Because of this much appreciated business, local milling machine, planer, drill and drill press and lathe manufacturers are enabled to keep their skilled employees engaged on half or two-thirds time right through the dull period, and expect confidently to add men and hours soon after the 15th of the month. In sympathy with the prevailing vacation taking time, early September has been light; but correspondence is of a very encouraging nature and much better conditions are expected along about the middle of the month.

There is little or no foreign business, the customary ante-election feeling in this country seeming to have found lodgment in the trade marts abroad and to have produced a similar "hold off until after election" sentiment. The local tool manufacturing trade will be especially well qualified to take care of new business in this line, for the large establishments which before the depression planned extensive improvements—a new manufacturing center at Oakley, just outside Cincinnati proper—have about completed their new structures and are fitting them up with the necessary appliances for work. These appliances are all strictly modern and up to date. The Modern Foundry Company is rapidly getting the various departments systematized and is adding men daily. This establishment is under the direct patronage and management of the Cincinnati Milling Machine Company, which is responsible for its being. Among the items of new machinery purchased and recently installed is a heavy planer, one of the largest built in this country. Another member of the Oakley colony also ready for business is the Cincinnati Planer Company, which has fitted up the new plant with a view to turning out heavy work. For a time at least the lighter work will continue to be built at the Buck street establishment. Work is progressing satisfactorily on the plans for the buildings of the Triumph Electric and Ice Machine companies to be located in the same place, and President Hobart hopes to be permanently installed in the new home within a year.

As a means toward familiarizing manufacturers and others in different lines with the extent and importance of the Cincinnati machinery and tool manufacturing industry, the work of the Cincinnati Industrial Bureau is commended. The fourth industrial excursion is scheduled for September 10, and this year will be run over the Cincinnati, Hamilton & Dayton and the Big Four railroads.

About 300 will make the trip, which will consume the entire day. The special train will leave Grand Central Station at 9 o'clock, and the first stop will be made at the Government dam No. 37 at Fernbank. The next is scheduled for 10 o'clock at the works of the Cincinnati Horseshoe & Iron Company, Cleves, Ohio. Luncheon will be served at the plant of the Philip Carey Company in Lockland, and other plants to be visited are the Richardson Paper Company, Stacey Mfg. Company and Globe Soap Company. A number of tool manufacturers will make the trip, and many of the excursionists will take the opportunity to make side trips to the large tool manufacturing establishments on the lines of the two roads.

Trade with boiler manufacturers is still light, save those having contracts for municipal installations, and through the South and Southwest in tobacco manufacturing plants and for generating power for ginning machinery. An important concern here having a large share of this class of trade reports business very good and improving steadily. In medium and small sized power units manufacturers of electric generating machinery are also busy and quite satisfied with conditions. Manufacturers of special machinery report a steady increase in inquiries and demand. The Wm. T. Johnston Company, manufacturer and dealer in sawmill, factory and mill supplies, has perfected a cigar box lumber graining machine which is having a good sale. The same company has sold for installation in the Ohio River steamer J. T. Hatfield one of its lever brake steam steering gears, and reports business in this line improving steadily.

In second-hand machinery little business is reported, the bulk of this business seeming to have been transacted earlier in the year, when the necessity for economy was apparently more pressing.

With the jobbing foundries the melt has not improved materially, but those making miscellaneous castings have steadily increased their heats in size and number. A number of outside establishments have agents in this field seeking contracts at what appears to be a considerable concession in price.

The roofing department of the American Sheet & Tin Plate Company at Piqua, Ohio, has been in operation several days late in August and early September, orders justifying resumption of activities for a week or so. Shipments of

stock during August aggregated double the shipments of July.

Reports from Fort Wayne, Ind., state that the American Car & Foundry Company is employing 2000 more men than it did six weeks ago, and that the following orders have been received in the meantime: 400 steel coal cars for the Lackawanna, 700 freight cars for the Chicago & Northwestern, 300 30-ton and 250 40-ton gondola cars for buyers not stated, 500 all wood 30-ton box cars for the International & Great Northern.

Cleveland Machinery Market.

CLEVELAND, OHIO, September 8, 1908.

The local machine tool market continues rather quiet, but each week shows a slight improvement over the preceding one. While the general outlook is slowly growing better, the increased demand is largely due to purchases by the automobile plants. Many of the automobile concerns that are preparing to overhaul and enlarge their plants with the view of increasing their next season's output have about completed their purchases of new machine tools, and the demand from this source is expected to fall off considerably during the present month. The automobile industry in this city, as well as throughout the Central West, is in a very satisfactory condition and builders are preparing for a large output of 1909 machines. Their activity is extending to the makers of automobile parts, the plants of the latter now being fairly busy with orders.

Outside of the activity among the automobile people machine tool sales are mostly limited to single tools, and there are very few inquiries for more than two or three tools. During the summer the sales were mostly of small tools, but now medium sized tools are moving somewhat more freely. The demand for second-hand tools continues fairly good and the supply that is being offered to dealers is only moderate.

The general manufacturing situation in metal working lines continues to improve slowly, as is shown by the fact that in a majority of plants the working force is being increased slightly from week to week. Machine tool builders are running their plants at an increased capacity, except possibly those that make heavy machinery exclusively and depend largely upon the railroads for their orders. Buying on the part of the railroads shows little if any improvement. As a result of the improvement in building activities, makers of concrete machinery report considerable improvement in orders and inquiries.

The foundry trade is picking up a little, but the demand for castings is still very light. This is particularly true of heavy castings.

New shops will probably be erected by the Wheeling & Lake Erie Railroad in Norwalk to replace those in that city that were recently destroyed by fire. The Norwalk Chamber of Commerce took up the matter immediately after the fire, when there was talk that the shops would be moved elsewhere, and has pledged $60,000 toward the erection of concrete fireproof buildings. A temporary repair shop is now being erected, for which the company has placed orders during the past week for a few machine tools.

The Ohio Ceramic Engineering Company, Cleveland, reports considerable increase in the number of orders for concrete machinery, industrial cars and its other products. The company is making an addition to its products by placing on the market a line of buckets. One, known as the Eclipse, is designed for handling stone, lime, ore, coal, &c., and the other, called the Ideal, is intended particularly for handling concrete in the erection of buildings. The company has received some good inquiries from the Pacific Coast for cement machinery, and its president, F. H. Robinson, left this week on a two months' trip to the coast, during which he expects to secure some good orders.

The Peerless Motor Car Company, Cleveland, has authorized the McGeorge Engineering Company to prepare plans for the first of a group of buildings that will amount to a duplication of the company's present plant. The structure that will be erected soon will be a repair shop, 53 x 130 ft. It will be three stories high, with steel frame and reinforced concrete floors. Other buildings will be erected later.

An automobile plant is being fitted up in Bowling Green, Ohio, by the Gramm-Logan Motor Car Company, a new concern that will build motor trucks and pleasure cars. The company has bought some of its machine tool equipment.

The XXth Century Heating & Ventilating Company, Akron, Ohio, furnace builder, reports that its business has returned to normal and that its plant is now being run full time with a full force of workmen.

The Standard Welding Company, Cleveland, reports a very satisfactory improvement in business conditions. The company at present has a large amount of work on hand and is operating its plant at full time with its full force of workmen.

The contract for a large addition to be erected by the Cleveland Foundry Company has been awarded to the National Concrete Fireproofing Company. The building will be 80 x 300 ft. five stories, of steel and concrete construction.

Having outgrown its present quarters, the Meilink Mfg. Company, Toledo, Ohio, maker of small safes, is looking for a new site for a larger plant. The company has had plans prepared for a new factory building 180 x 240 ft., on which work will probably be started as soon as a site is selected.

The secretary of the Board of Public Service, Cleveland, will receive bids September 15 for one 75-kw. direct connected alternating current generator unit, complete with exciter, switchboard and other appurtenances, for installation in one of the new municipal buildings at Warrensville.

Government Purchases.

WASHINGTON, D. C., September 8, 1900.

The Bureau of Yards and Docks, Navy Department, Washington, will soon ask bids for ten turbo generators for the various navy yards and for two new boilers for the Boston Navy Yard.

C. W. Goodman, Superintendent of the Indian School, Phœnix, Ariz., will receive bids until September 30 for boilers, pumps, motor, &c.

The Isthmian Canal Commission will receive bids until September 28, Circular No. 465, for an electric industrial railway, consisting of 15,600 ft. of trackage with 12 electric locomotives and 24 flat cars.

The Isthmian Canal Commission will receive bids until October 5, Circular No. 466, for pumps and other supplies.

The Isthmian Canal Commission will soon ask bids for a quantity of pneumatic tools and the necessary machinery and accessories for a complete rock crushing plant.

The following bids were opened September 1 for machinery for the navy yards:

Class 11.—One Hendey lathe—Bidder 50, Frevert Machinery Company, New York, $1692; 53, Garvin Machine Company, New York, $1545; 61, Hendey Machine Company, Torrington, Conn., $1745; 88, Manning, Maxwell & Moore, New York, $1745; 102, Niles-Bement-Pond Company, New York, $1492; 162, Vandyck-Churchill Company, New York, $1420 and $1635.

Class 12.—One Hendey lathe—Bidder 48, Fairbanks Company, New York, $828; 53, Garvin Machine Company, New York, $800; 61, Hendey Machine Company, Torrington, Conn., $900; 88, Manning, Maxwell & Moore, New York, $900; 102, Niles-Bement-Pond Company, New York, $898; 162, Vandyck-Churchill Company, New York, $815 and $940.

Class 13.—Three triple geared engine lathes—Bidder 48, Fairbanks Company, New York, $7392; 50, Frevert Machinery Company, New York, $7176; 53, Garvin Machine Company, New York, $7635; 70, I. H. Johnson, Jr., Company, Philadelphia, Pa., $8565; 88, Manning, Maxwell & Moore, New York, $3400; 102, Niles-Bement-Pond Company, New York, $7695 and $10,194; 162, Vandyck-Churchill Company, New York, $8100.

Class 14.—One back geared engine lathe—Bidder 48, Fairbanks Company, New York, $2220; 50, Frevert Machinery Company, New York, $1194; 53, Garvin Machine Company, New York, $1394; 61, Hendey Machine Company, Torrington, Conn., $1820; 70, I. H. Johnson, Jr., Company, Philadelphia, Pa., $1342; 88, Manning, Maxwell & Moore, New York, $1438; 102, Niles-Bement-Pond Company, New York, $1335; 162, Vandyck-Churchill Company, New York, $3885.

Class 15.—One single shaping machine—Bidder 88, Manning, Maxwell & Moore, New York, $2050 and $2375; 102, Niles-Bement-Pond Company, New York, $2240.

Class 16.—One universal shaping machine—Bidder 49, W. H. Foster Company, New York, $644; 53, Garvin Machine Company, New York, $702; 63, Hill, Clarke & Co., Boston, Mass., $600; 88, Manning, Maxwell & Moore, New York, $645 and $688; 102, Niles-Bement-Pond Company, New York, $658; 117, Potter & Johnson Machine Company, Pawtucket, R. I., $644.

Class 17.—Three traveling head shaping machines—Bidder 88, Manning, Maxwell & Moore, New York, $3972 and $4750; 102, Niles-Bement-Pond Company, New York, $4480.

Class 18.—One horizontal boring and drilling machine—Bidder 102, Niles-Bement-Pond Company, New York, $2088; 114, Prentiss Tool & Supply Company, New York, $1719.

Class 19.—One planing machine—Bidder 48, Fairbanks Company, New York, $1800; 50, Frevert Machinery Company, New York, $2420; 53, Garvin Machine Company, New York, $1960; 88, Manning, Maxwell & Moore, New York, $1640 and $1850; 102, Niles-Bement-Pond Company, New York, $1840; 145, William Sellers Company, Philadelphia, Pa., $2270; 162, Vandyck-Churchill Company, New York, $1850.

Class 21.—One patternmaker's lathe—Bidder 4, American Wood Working Machinery Company, Rochester, N. Y., $150; 6, Atlantic Works, Philadelphia, Pa., $200; 44, Fox Machine Company, Grand Rapids, Mich., $123.50; 45, J. A. Fay & Egan Company, Cincinnati, Ohio, $214; 47, Fairbanks Company, New York, $141; 62, Hill, Clarke & Co., Boston, Mass., $203; 114, Prentiss Tool & Supply Company, New York, $123; 128, Charles E. Robideoux, St. Louis, Mo., $134.50.

Class 22.—One saw bench machine—Bidder 4, American Wood Working Machinery Company, Rochester, N. Y., $325; 6, Atlantic Works, Philadelphia, Pa., $285; 39, Drew Machinery Agency, Manchester, N. H., $235.26; 44, Fox Machine Company, Grand Rapids, Mich., $378; 45, J. A. Fay & Egan Company, Cincinnati, Ohio, $410; 50, Frevert Machinery Company, New York, $204; 62, Handlan-Buck Mfg. Company, St. Louis, Mo., $404; 111, Oliver Machinery Company, New York, $394 and $359; 114, Prentiss Tool & Supply Company, New York, $348; 129, B. M. Root Company, York, Pa., $175; 142, H. B. Smith Machine Company, Smithville, N. J., $203.

Class 23.—One semi-inclosed motor—Bidder 31, Central Electric Company, Chicago, Ill., $418.80; 34, D'Olier Engineering Company, Philadelphia, Pa., $330; 47, Fairbanks Company, New York, $190; 56, General Electric Company, Schenectady, N. Y., $289.50; 66, Holtzer-Cabot Electric Company, Brookline, Mass., $280; 103, Northern Electric Mfg. Company, Madison, Wis., $236.60; 136, Sprague Electric Company, New York, $257.85; 143, B. F. Sturtevant Company, Hyde Park, Mass., $255; 166, Western Electric Company, New York, $288; 167,

Westinghouse Electric & Mfg. Company, Pittsburgh, Pa., $273.07; 172, Burk Electric Company, Erie, Pa., $334.

Class 34.—One dust collector—Bidder 47, Fairbanks Company, New York, $139.90; 108, Ole K. Oleson, New Orleans, La., $79; 109, S. Obermayer Company, Cincinnati, Ohio, $150; 171, Buffalo Forge Company, Buffalo, N. Y., $145.

Class 25.—One steel plate planing mill exhauster—Bidder 34, D'Olier Engineering Company, Philadelphia, Pa., $625; 104, National Blower Works, Milwaukee, Wis., $650; 143, B. F. Sturtevant Company, Hyde Park, Mass., $450; 171, Buffalo Forge Company, Buffalo, N. Y., $520.

Class 26.—One metal band saw—Bidder 4, American Wood Working Machinery Company, Rochester, N. Y., $110; 6, Atlantic Works, Philadelphia, Pa., $200; 45, J. A. Fay & Egan Company, Cincinnati, Ohio, $132; 47, Fairbanks Company, New York, $139; 88, Manning, Maxwell & Moore, New York, $115; 108, Ole K. Oleson, New Orleans, La., $136; 109, S. Obermayer Company, Cincinnati, Ohio, $175; 118, J. W. Paxson Company, Philadelphia, Pa., $132.50; 129, B. M. Root Company, York, Pa., $137; 161, Vermilye & Power, New York, $98.

Class 27.—One electro magnetic separator—Bidder 34, D'Olier Engineering Company, Philadelphia, Pa., $245; 47, Fairbanks Company, New York, $207; 50, Frevert Machinery Company, New York, $250; 88, Manning, Maxwell & Moore, New York, $330; 109, S. Obermayer Company, Cincinnati, Ohio, $250; 118, J. W. Paxson Company, Philadelphia, Pa., $300.

Class 41.—One universal drilling and boring machine—Bidder 38, Detrick & Harvey Machine Company, Baltimore, Md., $6335; 102, Niles-Bement-Pond Company, New York, $6100 and $9650.

Under bids opened July 30 for supplies for the Isthmian Canal Commission, the General Electric Company, Schenectady, N. Y., has been awarded contract for one engine and dynamo at $750.

The following awards have been made for machinery for the navy yards, bids for which were opened July 14:

Niles-Bement-Pond Company, New York, class 43, one cold saw cutting off machine, $1397.

Newton Machine Tool Works, Philadelphia, Pa., class 44, one automatic saw sharpening machine, $140.

Under opening of July 28 for supplies for the navy yards, the Yale & Towne Mfg. Company, New York, has been awarded class 242, one 4-ton electric hoist, $388.

The following awards have been made for supplies for the navy yards, bids for which were opened August 4:

C. F. Graff, Seattle, Wash., class 1, constructing water supply system at the Naval Magazine, $19,995.

Niles-Bement-Pond Company, New York, class 2, one auxiliary hoist, $2080.

Under bids opened August 11 for machinery for the navy yards, Manning, Maxwell & Moore, New York, have been awarded class 51, one gang drill, $625.

OBITUARY.

GEORGE G. BLACKWELL, founder and senior member of George G. Blackwell, Sons & Co., Ltd., Liverpool England, died August 26. He was well known in this country, having made frequent visits here for the purpose of pushing the sale of the special alloys manufactured by his firm.

MAX AMS, president of the Max Ams Machine Company of New York, and for 14 years president of the Mauser Mfg. Company, died September 5 at his home in Mount Vernon, N. Y., after an illness of six months. He was sixty-four years old. He was born in Waldkerch, in Baden, Germany, and came to this country in 1866. He leaves three sons and a daughter.

THOMAS M. RICHARDS, first vice-president of the Philadelphia & Reading Coal & Iron Company, died in Philadelphia September 5, after an illness of five months. He was one of the best known men connected with the anthracite coal trade, having been identified with its development for 50 years. He was born in Reading, Pa., 72 years ago, and entered the service of the Reading Railroad as a clerk in the office of the division superintendent at Reading, and filled various positions, becoming first vice-president of the Coal & Iron Company three years ago.

JACOB SHAABER, a retired foundryman, died August 23 at Reading, Pa., aged 75 years. He was a native of Reading, served his apprenticeship as a molder there, and ultimately became one of the principals in the Johnson Foundry Company, retiring two years ago. He leaves a widow, two sons and two daughters.

Forest fires have swept over portions of the Mesaba iron range in Minnesota in the past week and have been very destructive. Chisholm, which had a population of about 7000, built up entirely on iron mining industry, has been utterly destroyed, and the State militia are now in charge of the town site. Hibbing, the most important town on the Western Mesaba, having a population of 12,000, is reported by late dispatches to be in imminent danger. Buhl, near Hibbing, was entirely surrounded by fire on Tuesday of this week, and it was believed that nothing but rain or a change of wind could save the village.

PERSONAL.

Walter O. Amsler, formerly a member of the Amsler Engineering Company, engineer and contractor for blast furnaces, open hearth furnaces and gas producers, which concern is now out of existence, has established himself at 627 Wabash Building, Pittsburgh, where he will continue to carry on this business.

W. G. Clyde, assistant general manager of sales of the Carnegie Steel Company, Pittsburgh, is combining business with pleasure in a month's trip to Mexico.

J. G. Carothers, formerly assistant sales agent of the Cambria Steel Company, Cincinnati, has been appointed assistant manager of sales with the Carnegie Steel Company, Cincinnati office, succeeding R. A. Bruce, who has been transferred. William F. Vosmer has been appointed assistant sales agent in the Cincinnati office of the Cambria Steel Company, succeeding Mr. Carothers.

The Wm. J. Smith Company, New Haven, Conn., has just appointed as superintendent in the manufacture of its One-Lock adjustable reamers, W. B. Gardiner, who has for the past 10 years been actively at work in the model department of the Winchester Repeating Arms Company, New Haven, Conn.

R. D. Day, formerly connected with the home office of the Mesta Machine Company, Pittsburgh, Pa., has been appointed to succeed J. A. Schroeder as manager of the New York office, Hudson Terminals Building.

Philip T. Dodge, president of the Engineers' Club of New York, has returned from a voyage to Europe. His itinerary included Austria, Hungary, Italy, Russia and Germany.

The Cleveland Crane & Car Company, Wickliffe, Ohio, has opened a Chicago office at 1203 Marquette Building, with W. A. Rider in charge.

D. W. Anderson, recently of Pittsburgh, has been appointed local manager of the Oswego, N. Y., plant of the Railway Steel Spring Company. W. J. Golden, former manager, will be transferred to one of the company's other plants.

D. Vickers, managing director of Vickers, Sons & Maxim, Ltd., has been elected Master Cutler of Sheffield, England.

W. C. Runyon, New York, president of the Struthers Furnace Company, Struthers, Ohio, returns this week from a summer trip in Europe.

August Marx, general manager of the Philadelphia Roll & Machine Company, Philadelphia, Pa., returned September 2, after a two months' trip abroad.

Anson W. Allen, who has been connected with the Pencoyd Iron Works (American Bridge Company) Pencoyd, Pa., for the past 20 years, and who has been superintendent of the open hearth department for some seven years, resigned his position September 1 to accept that of superintendent of the open hearth department of the Tennessee Coal, Iron & Railroad Company, at Ensley, Ala. His associates at Pencoyd met in an informal way August 29 and presented him with a gold watch and chain.

H. T. Wigham, representative of the Carnegie Steel Company in London, England, who arrived in this country August 28, will sail for his post September 15. He has been combining business with pleasure.

H. M. Lucas of the Lucas Machine Tool Company, Cleveland, Ohio, sailed for Europe September 5 for a business trip in the interests of the company.

Edward Anglin, general superintendent of the Sharon Steel Hoop Company, Sharon, Pa., has resigned. His successor is George W. Short, who for several years was superintendent of the steel mill.

Ambrose Swasey, of the Warner & Swasey Company, Cleveland, Ohio, has returned from Europe.

HARDWARE

AS a natural result of the importance and complexity of the transportation questions engaging the public attention the laws in regard to freight matters are constantly subjected to the closest scrutiny. This scrutiny is the more painstaking and persistent in view of the direct pecuniary interest of merchants and shippers in securing for themselves any advantages which a thorough knowledge of the law will give them, as well as in view of the necessity of a strict compliance with the laws. Under the provisions of the statutes it is necessary for the party receiving shipments to see to it that he does not pay less than the legal rates, which would subject him to very severe penalties. It is therefore necessary for him to have full and accurate information in regard to the rates legally in force. In seeking this information, however, the merchant may discover a curious defect in the interstate commerce law. The railroad is required to post two copies of its tariffs at every point where freight is *received* for shipment, but the law does not require tariffs to be posted or even kept on file where shipments are *delivered*. The law seems to be based upon the idea that the shipper pays the freight, and should have at the shipping point legal information as to the charges. In general practice, however, the consignee pays the freight, and the law does not require the railroad to give him any information as to the legal rates, although he is the man who pays the charges. He commits a misdemeanor if he pays less than the legal rate, and is liable to a fine of $20,000 for each offense, and two years' imprisonment; and his only information is what the railroad gives him as a matter of business courtesy.

Something is to be learned from the method adopted in an Eastern town with a view to securing the trade of the farmers of the surrounding territory. A number of the merchants of this town representing different lines of business unite in an arrangement with a man who makes regular trips through the country, distributing their circulars and printed matter and in other ways promoting their interests. He makes two or three trips monthly, covering on their behalf a radius of about 10 miles. In this way the dodgers or pamphlets furnished by manufacturers find a natural outlet as well as such circulars or circular letters as may be specially prepared by the merchants. It is not unlikely that something along this line might advantageously be done in other places. There may be in work of this character an opportunity for some who are not more profitably employed to get busy and useful. An energetic and tactful man might make such service justify itself by its results, and at the same time become a stepping stone to more permanent and more remunerative work. The getting together of the merchants of the town for such united action is certainly commendable, and might lead to other forms of co-operation. The effort to make use to the best advantage of this itinerant service would naturally have a stimulating effect on the merchants represented, as they endeavor to provide suitable printed matter for general distribution and perhaps make special appeals adapted to the varying circumstances of the prospective customers thus canvassed, as something like personal relations are gradually established. The making of the effort would in itself be a good thing as emphasizing the too generally neglected duty of going out for business instead of simply waiting for it to come.

Condition of Trade.

Reports quite generally indicate a perceptible improvement in the volume of Hardware business with both manufacturers and jobbers. This department of trade thus keeps pace with other lines of business, in most of which there is undoubtedly not only a hopeful feeling, but also an actual increase in the volume of transactions. The successful overcoming of financial difficulties and the abundance of money, accompanied by a growing confidence in regard to its investment in commercial and industrial enterprises, is rapidly removing obstacles to normal activity in trade. Large if not record breaking crops which will command good and in some cases high prices furnish a basis for prosperous conditions in the agricultural sections, whose money will sooner or later find its way into diversified trade channels. The consumption of goods all over the country has during the dull months been going on steadily if not as rapidly as usual, and stocks are calling for replenishment. The people, too, are making up their minds that the time has come to take hold of business with renewed energy, though still conservatively, and of course without the dash and recklessness which generally characterized the trade before the recent slump. Orders are as a result being placed more freely with the traveling salesmen who visit the retail merchants, while jobbers and the larger retail houses are purchasing with considerable more liberality than a short time ago. The political canvass does not appear to militate seriously against business interests. Prices for Hardware and related lines are better maintained than for some time. While very little in the way of advances is reported or to be expected, it is gratifying to note that reductions in price are few. Lines in which the raw material is the principal element of cost have quite generally settled in price, and other lines in which the principal expense of making is the labor do not call with much urgency for lower quotations because wages have not been greatly, if at all, reduced. Competition is of course active and perhaps a little quickened, as with the improvements in the general situation manufacturers are desirous of having their share in whatever business is within reach. But a certain conservatism and regard for the upholding of the market as a whole still characterizes their policy to a considerably greater degree than was the case in former periods of somewhat reluctant trade.

Chicago.

While the progress toward a restoration of normal activity is slow, and at times halting in its movement confidence in its ultimate achievement at no very remote date is unshaken; but while this is true there is nevertheless more or less disappointment and chafing over the tedious, tardy, onward movement. There is nothing in the August summary of business in Hardware lines to inspire enthusiastic comment, yet withal, it is only disappointing in so far as overreaching expectations may have made it so; for the totals show a small increase over July, though a comparison of results with the corresponding month of last year yields a less favorable showing. There has, however, been some shrinkage of values in the meantime and the volume of goods represented by sales accounts is at present larger in proportion than it was a year ago. To the extent therefore of the shrinkage in values actual consumption is now greater than is apparent from a comparative showing of sales totals. Trade in all Hardware lines is drifting along in uneventful

ful fashion with no conspicuous change in the attitude of any of the several market interests. Buyers are generally inclined to estimate their future requirements with a large degree of conservatism, though in some directions they are compelled by increased demand to order more liberally. This is particularly true with respect to Wire Nails and Fencing, which are in good demand with prospects for a fairly good fall trade. The movement in Bale Ties, too, has exceeded expectation, and as a result it is stated that manufacturers are from two to three weeks behind in shipments. No radical price changes are reported, though in many lines the effect of close competition is seen in a lack of firmness in the maintenance of recognized schedules. But altogether the situation in this respect is far more satisfactory than is usual in such periods of depression. Some fair sized Bolt orders have been taken by distributers within the past two or three weeks, several for car lots having been placed by manufacturing interests and railroad repair shops. Some fluctuations have occurred in Copper Sheets and Bottoms due to changes in prices of the metal. Expressions concerning the outlook are generally of a conservatively optimistic nature, reflecting a disposition to avoid false enthusiasm and a determination to face the issue squarely with confidence in the outcome.

NOTES ON PRICES

Wire Nails.—Business shows no falling off with the new month, demand keeping fully up if not a little ahead of that for the same period in August. Orders for the most part call for immediate shipment, though some are for later delivery. Quotations, which are regularly maintained, are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads, to jobbers	$1.95
Carload lots to retail merchants	2.00
Less than carloads to jobbers	2.00
Less than carloads to retail merchants	2.10

New York.—The demand at this point continues in about the same volume as for the past two or three weeks, which is moderate. Nails are held on the basis of $2.30 per keg in small lots at store.

Chicago.—The opening week of September has produced a fair amount of new business, the tonnage rate established in the latter part of August being well sustained. Shipments are moving in fairly satisfactory volume, and jobbers are beginning to anticipate their requirements a little farther ahead. We are advised that regular prices are being maintained. Quotations are as follows: $2.13 in car lots to jobbers, and $2.18 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

Pittsburgh.—The demand for Wire Nails is steadily getting larger, and, strange as it may seem, it is a fact that the amount of new business entered by the mills in August, and shipments in that month, compared very favorably with the same month last year. Some contracts are being placed for delivery within 60 days from date of order, but most of the new business is still confined to running orders for actual needs. The increase in demand for Wire Nails is regarded as a natural reflection of the prosperity of the agricultural interests. Prices are said to be absolutely maintained. Quotations for base sizes are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads, to jobbers	$1.95
Carload lots to retail merchants	2.00

Galvanized Nails are quoted at $1 over the price of the regular Nails.

Cut Nails.—The situation in the Cut Nail market shows some improvement in that demand is noticeably greater, which, however, continues moderate in volume. Concerns having contract orders are also sending in specifications for shipment. The general market is represented by the quotation of $1.80, base, per keg, f.o.b. Pittsburgh, but $1.75 is the extreme market, on carloads and over, to the large trade. In the Western market Iron Cut Nails are held at an advance of 10 cents per keg over Steel Cut Nails, but this differential is not observed in the East.

New York.—There is nothing of particular interest in the local market. Demand continues moderate and confined to immediate requirements. They are held on the basis of $2.15 per keg for small lots at store.

Chicago.—Moderate improvement is observed in the demand for Cut Nails, though orders are mainly for small lots. Prices are unchanged, but the tone of the market is sensibly improved. We quote Chicago prices as follows: In car lots to jobbers, Iron Cut Nails, $2.08; Steel Cut Nails, $1.98. In small lots from store: Iron Cut Nails, $2.25; Steel Cut Nails, $2.15.

Pittsburgh.—The better conditions in Wire Nails are reflected in Cut Nails to some extent, demand for which is showing betterment, new orders and specifications against contracts now coming into the mills being better than for some time. The tone of the market is fairly strong and no immediate change in prices is expected, as the Cut Nail Association will not have a meeting until the latter part of this month. The general market is represented by the quotation of $1.80, base, per keg, f.o.b. Pittsburgh, but $1.75 is the extreme market, on carloads and over, to the large trade. In the Western market Iron Cut Nails are held at an advance of 10 cents per keg over Steel Cut Nails, but this differential is not observed in the East.

Barb Wire.—New business from mill continues moderate as is expected at this season when trade is usually dull. Regular quotations are reported as being maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, 2 per cent. discount for cash in 10 days:

	Painted.	Gal.
Jobbers, carload lots	$2.10	$2.40
Retailers, carload lots	2.15	2.45
Retailers, less than carload lots	2.25	2.55

Chicago.—The demand is seasonably active, though nothing more than desultory requirements are expected until the fall trade is fully under way. Shipments are of satisfactory volume for the between season period. Regular prices are reported as being firmly held. Quotations are as follows: Jobbers, Chicago, car lots, Painted, $2.28; Galvanized, $2.58; to retailers, car lots, Painted, $2.33; Galvanized, $2.63; retailers, less than car lots, Painted, $2.45; Galvanized, $2.75; Staples, bright, in car lots, $2.25; Galvanized, $2.55; car lots, to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

Pittsburgh.—Some buying for fall trade has started, notably from the South and Southwest, but general demand and shipments by the mills are light, as this is the dull season of the year in this trade. Reports are that prices are being maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days.

	Painted.	Gal.
Jobbers, carload lots	$2.10	$2.40
Retailers, carload lots	2.15	2.45
Retailers, less than carload lots	2.25	2.55

Plain Wire.—Increased demand is shown by a larger number of orders, as well as by their size. Fence manufacturers, as well as other consumers of Wire, are ordering more liberally. Regular prices are reported as being maintained. Quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of $1.80 for Plain and $2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the price to retailers being 5 cents additional:

Nos.	6 to 9	10	11	12&12½	13	14	15	16
Annealed	$1.80	1.85	1.90	1.95	2.05	2.15	2.25	2.35
Galvanized	2.10	2.15	2.20	2.25	2.35	2.45	2.85	2.95

Chicago.—New orders are not only more numerous, but they are of larger tonnage than they were a while back. Fence makers are ordering farther ahead, in view of the increasing demand for their product. Other Wire users are likewise purchasing more liberally, and shipments are correspondingly increased. Prices are represented as being firmly maintained. We quote as follows: Car lots to jobbers, $1.98, f.o.b. Chicago, and to retailers, $2.05.

Pittsburgh.—The outlook for fall trade is very encouraging, the mills receiving large orders from Wire Fencing and other consumers. Shipments on new business and on contract orders by the mills are heavier now than for some time. Quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of $1.80 for Plain and $2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent discount for cash in 10 days, the price to retailers being 5 cents additional:

Nos.	6 to 9	10	11	12&12½	13	14	15	16
Annealed	$1.80	1.85	1.90	1.95	2.05	2.15	2.25	2.35
Galvanized	2.10	2.15	2.20	2.25	2.35	2.45	2.85	2.95

Scythes.—It is authoritatively stated that the new prices on Scythes announced this week represent a decline of about 50 cents per dozen.

Tacks.—The market on Tacks shows a slight tendency to stiffen. It is reported that leading manufacturers have been taking steps with a view to securing greater regularity in prices, with the result that concessions are perhaps a trifle less liberal than during the spring and summer.

Bolts and Nuts.—Attention has already been called to an improvement in the market for Bolts and Nuts. This has been emphasized this week by the appearance of notices from most of the leading manufacturers withdrawing quotations and stating that prices will be named on application. As a result of this movement it is understood that manufacturers who have been meeting the extreme prices will make appreciable advances. In the case of others who have been more conservative changes will be less important.

Window Glass.—According to reports but a few of the hand operated Glass factories commenced operations the first of the present month, and it may be later than the middle of the month before a general resumption takes place. The organization of the Window Glass manufacturing interests contemplates, it is understood, the leasing of the factories by strong financial interests, which plan, it is thought, will obviate the difficulties of keeping manufacturers in line which have attended former attempts to sustain prices upon a paying basis. The fact that the wage scale has not been entirely settled upon for the coming fire introduces some uncertainty as to the future price of Glass, but the impression prevails that it will be higher than at present. The demand is showing a steady increase, especially in the Western portion of the country. Manufacturers' discounts, from manufacturers' list of January 1, 1901, are as follows: For A single and double strength Glass, 90 and 15 per cent.; for B single and double strength Glass, 90 and 20 per cent. Jobbers' quotations from jobbers' list, October 1, 1903, for all sizes of single and double strength Glass for the entire country is 90 and 20 per cent. discount.

Linseed Oil.—Nothing of interest has developed during the week, the demand being confined to small lots. The market is not regarded as strong at present quotations, as it is probable that these prices could be slightly shaded. Quotations are as follows: Western Raw, car lots, 43 to 44 cents; State and Western Raw, barrel lots, 44 to 45 cents per gallon. Boiled Oil is 1 cent per gallon advance on Raw.

Rope.—There is comparatively little activity in the Rope market, the demand failing to assume large proportions. Considerable Manila fiber that is somewhat red in color is in the market, and consequently does not grade up very high. Some Rope jobbers are quoting pure Manila Rope at figures ranging from 8¾ to 9 cents per pound basis, which is possibly made from some such fiber. General quotations for Rope 7-16 in. in diameter and larger are as follows: Pure Manila, 9½ cents; Pure Sisal, 7 cents; No. 1 Jute, ¾ in. and up, 5¾ cents; No. 2 Jute ¼ in. and up, 5¼ cents.

Spirits Turpentine.—Only a moderate amount of business has been transacted in this market during the week, and prices remain about as before. At Southern points receipts have been abundant and sales light. The New York market is represented by the following quotations: Oil Barrels, 38½ to 39 cents; machine made barrels, 39 to 39½ cents per gallon.

THE VALUE OF PRACTICAL WINDOW DISPLAYS.

Articles Shown in Actual Operation do More than Merely Attract Attention; They Sell Themselves.

BY CLARFIELD.

THE management of a great industrial show enterprise is using the catch phrase, "An ounce of sight is worth a ton of print." The sentence is not particularly well constructed, technically speaking, but the meaning is clear, even forceful. Articles shown in actual operation, right before the eyes of the prospective users, will tell more for themselves at a glance than could be told in a page of print or a half-hour of argument.

Add to this silent demonstration the skilful argument of an experienced salesman who understands his subject and can quickly judge his prospect, and a selling combination is formed that must certainly prove effective. Even when actual sales are not made, the prospect who goes away from such a demonstration taking with him descriptive circulars and catalogues is sure to read this literature with far greater understanding than he will that of a competitor whose goods he has not seen in operation.

It has been well said that the mission of advertising is "attraction, persuasion, *conviction*, BUSINESS." How better can this be accomplished than by a combination of good printing, actual demonstration and skilled salesmanship?

A Notable Incubator Display.

In one of the busiest streets of downtown New York there is a firm of Incubator manufacturers which makes constant use of this form of window attraction. A glance at the group of interested onlookers which is always in front of this window is enough to prove its effectiveness. Sometimes the eggs may be seen in the actual process of hatching. At other times a brood of chicks or ducklings is at play in the sunny window, scratching in the sand or swimming in the small pool, entirely oblivious of the curious onlookers, and apparently never missing the guardian care of the motherly old hen—probably because they never knew such care. One passerby remarked that the unrestraint of such an orphan existence might develop the young chicks into old jail birds, but, according to the most authentic reports, there is no such instance on record.

This concern sells more than Incubators. They offer live animals and birds and fowl and eggs and feed. It is known that this practical demonstration sells many Incubators, but, further than that, it is a proven fact that the Incubator display frequently sells a puppy dog, or some other animate or inanimate thing, for not all the customers drawn into the store in this way are interested in hatching eggs.

As Applied to the Hardware Store.

There are many Hardware merchants who handle Incubators, and these should find in this suggestion a valuable means of stimulating local interest and increasing their business in this line.

There are many lines in the Hardware store which can be demonstrated with equal effectiveness. If there is a chimney convenient to the window, a Range or Heating Stove can be shown in operation. In demonstrating a Range it will pay to set aside two or three days or a week, and advertise widely that practical demonstrations in cooking on the Range will be given on these days. The forenoon of one day can be devoted to bread baking, the afternoon to roasting, another day to the preparation of a breakfast, which will demonstrate the work upon the top of the Stove.

A Fine Cook Engaged.

For such an event as this the best local cook should be retained, and the articles of food prepared should be held on display in the store during the day where they can be sampled by those customers interested. If the window is a large one the entire work may be carried on in the window, which should be fitted up as a model kitchen, and the effort will then be an effective advertisement for all sorts of household utensils, for the Porcelain Sink, and even for sets of Stationary Washtubs, which

could be used for a table if the Hardware merchant does not sell the ordinary Kitchen Tables. The plan, of course, is elaborate, and if the window is not spacious enough to accommodate it, then it will prove almost as effective if conducted within the store, provided the event is well advertised.

A "Cold" Display with Live Steam.

In stores which are heated by steam, or where access may be had to a steam boiler or exhaust pipe, the Stove may be set up "cold," and by connecting the steam through the bottoms of Teakettle and Boilers on the top of the Stove the effect of actual cooking can be obtained. This, however, should not be attempted in very cold weather, for the steam will condense and freeze upon the window glass, thus obscuring the display.

Demonstration at Home.

One Hardware merchant who lives near his store makes a practice of setting up in his home each winter the latest model of the Heating Stove which he handles, for the double purpose of keeping himself perfectly familiar with the operation of all the new improvements and for demonstrating the great power and economy of the Stove to interested customers. Each year he sets up a new Stove of a different type for the same purpose. He finds that no more effective argument can be produced than to show the actual area heated, and to know the exact amount of coal consumed in any given period. To strengthen his position, he keeps a record of weather conditions in a diary, with the amount of coal used under the varying conditions.

To Demonstrate Refrigerators.

Manufacturers of Refrigerators are usually willing to supply one with glass doors for demonstration purposes. Such an one will always attract attention, if placed in a window with ice and other contents in place. To prove that one article will not contaminate another is one of the most effective arguments for a Refrigerator, and as milk is probably the most sensitive to such contamination, a pan of fresh milk placed with the other contents, and which customers may be at liberty to taste, is sure to be a convincing test. One firm created a sensation by placing a box of matches in the food chamber to prove that the air was dry. Customers were invited to strike these matches when they came into the store.

There are plans almost innumerable by which the Hardware merchant can utilize his windows to the great advantage of his business. These suggestions, if not applicable in detail to all localities, should at least point the way to more effective effort in this direction.

AUSTRALIAN NOTES.

MELBOURNE, August 3, 1908.

FROM A SPECIAL CORRESPONDENT.

THERE has been a fair amount of general Hardware trade during the past month, although July is perhaps the dullest month of the year. Melbourne and Sydney are both busy preparing for the visit of the American fleet. The annual agricultural show in Melbourne is timed to take place during the week of the fleet's visit, and retailers in every class of trade are looking forward to reaping a big harvest. There can be no doubt that the influx of visitors from the country districts will be far greater than usual, and prices for everything are going up in anticipation of this carnival week. The government has declared three days' holiday, although the holidays are not compulsory, and retailers will not take advantage of the full three days. Reports from the other States of the commonwealth all indicate a steady trade without any adverse circumstances. Stock-taking generally is finished and the year's business seems to have been universally satisfactory.

The building trade is good right through Australia and New Zealand. Indeed, it almost seems as if some of the cities are being entirely rebuilt, and argues a vast amount of wealth in the country and a great deal of enterprise and faith in its future. Warehouses and factories are increasing in number, and our protective tariff is adding every month to our list of manufactures.

The commonwealth revenue for the year ended June 30 has totalled over £15,000,000 sterling, being £2,000,000 in excess of the previous year. Of this amount, the customs and excise contributed, roughly, £11,500,000, and the Post Office £3,250,000.

Wool exports from Victoria and New South Wales for the year ended June 30 are less than during the year ending June 30, 1907, although there was an increase in the exports from the other States and New Zealand. The figures are: Victoria 462,815 bales during 1907-8, as against 506,650 during 1906-7; New South Wales, 777,748 bales, against 837,869.

Other States show an increase, Queensland having exported 149,000, as against 117,550 the previous year; South Australia, 163,892 bales, against 146,430; West Australia, 50,745 bales, against 40,789; Tasmania, 21,050 bales, against 13,840; New Zealand, 436,940 bales, against 427,058.

The total imports into New Zealand during the year 1907 were valued at £16,533,000, showing an increase of considerably over £2,000,000 for the previous year. Hardware imports are 25 per cent. higher than 1906. In 1906 the hardware imports represented a total of £253,000 from Great Britain, and £37,000 from the United States. In 1907 the figures were: Great Britain, £320,000; United States, £52,000.

Plumbing Specialties are likely to continue in increasing demand, with the spread of sewerage systems throughout Australasia. The Melbourne and suburbs sewerage scheme is still incomplete. Hobart is going in for further development. Other States and towns throughout Australasia will call for Plumbers' Hardware for many years to come.

The export of coal from Newcastle during the first half of the current year shows an increase of half a million tons over the corresponding half year in 1907. During January to June, inclusive, 1908, the amount exported was 2,573,000 tons, valued at £1,231,500. The total number of vessels which entered the port was 2535.

The government of the State of Victoria has recently accepted several contracts for the supply of rabbit proof Wire Netting. This line they are supplying to land owners throughout the various shire councils. Rylands, Ltd., a British concern, through their Melbourne agents, secured a contract for 1500 miles, 17 gauge by 1½ in. at £20 16s. 6d. per mile. A Belgian firm secured a contract for 500 miles 1¼ in Netting at £25 per mile. An Australian firm, Lysaght Brothers & Co., tendered for this contract, and the government agreed to give them a preference up to £1 per mile for the local article. Their tender, however, was £1 per mile more than the accepted contracts. The Government is taking from Messrs. Lysaght Brothers 250 miles of 1½ in. Netting at £21 16s. 6d. per mile, and 250 miles of 1¼ in. at £26.

Railway and Tramway construction is being pushed on energetically throughout the various States, and the demand for rails, fishplates, rolling stock, &c., is likely to get more healthy as time goes by.

The Lithgow Iron Works still remain closed down, pending the passage of an Iron Bonus bill. The new proprietors of these works claim that the industry cannot be carried on under existing circumstances, save at a loss.

W. S. Friend & Co., the well-known Sydney wholesale ironmongers, are just completing extension of premises in York street. This firm is one of the oldest houses in New South Wales, and one of the best known throughout Australia.

Briscoe & Co., Ltd., of Sydney, have just moved into large premises in Kent street. Their new building is five stories in hight, exclusive of the basement, with a frontage of 72 ft. and a depth of 140 ft.

SUGGESTIONS ON THE CARE OF SAWS.

A VALUABLE BOOKLET on the care of Saws has just been issued by the Taintor Mfg. Company, for whom John H. Graham & Co. are sole agents, 113 Chambers street, New York. The useful hints thus presented are from C. C. Taintor, inventor of the Taintor Positive Saw Set, which is described in the closing pages of the booklet. The pamphlet is fully illustrated and is of value to all who have to file and set Saws, whatever style of Saw Set is used. As indicating its interest and character and at the same time laying before our readers many practical suggestions on the subject, we give the following extracts from the booklet:

The setting of a Saw is more important than is generally believed. A Saw properly set will run more smoothly through the wood, thus saving the strength of the user and will permit him to work closer. The teeth should be bent with perfect uniformity and in a manner to squeeze the metal so that the teeth will be "set," *i. e.*, fixed in their new position. Teeth that are only bent and not "set" will spring back unevenly. The first so-called Saw Sets only bent the teeth, but a blow from a hammer displaced the metal; therefore some of the older men still insist that a hammer-set is best.

A Saw should be set as little as may be and still have it "clear." It is a common fault of workmen to set their Saws too much, and it is often the case that they are set so wide that the chip or sawdust gets between the end of the tooth and the wood which is being cut, thus causing binding. Medium size teeth should be set about one-half way down from the points to their roots, and coarse ones about one-third of the way, but never as low as the roots.

Defects in Tools for Setting.

A great many tools are on the market for setting Saws, some of them only bend the teeth and do not "set" them—that is, force the metal to the support of the tooth in its new position.

Others are liable to slip on the tooth after the pressure is applied, so there is no certainty in the distance from the point that the tooth will be bent, and consequently the teeth will not stand in line.

Others have gauges that are liable to slip; still others set the thick end of the Saw (where there is a difference in thickness) more than the thin end, thus increasing the amount of set by double the difference of thickness.

Probably the greatest fault of most of these tools is that they injure the side of the tooth by cutting a fine groove or crease where it is bent. As a result, the tooth is weakened and may break at the next setting, or, what is more likely to occur, when the tooth is filed the point comes off and many a workman blames his Saw manufacturer for what is really due to the fault of a Saw Set which is improperly constructed.

Another fault of Saw Sets is that the blow or pressure, as the case may be, is applied first at the point of the tooth. This being the weakest part, it first curls it, then straightens it, and sometimes breaks it. A tool producing any of these results should not be used.

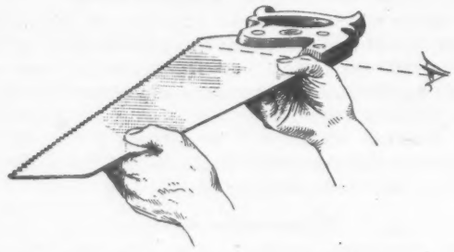
The Taintor Positive Saw Set was especially designed to obviate all of these defects. The teeth when set by this tool conform to the side and face of the anvil on which the setting has been done. The faces of the anvil are numbered so that any setting may be returned to, but these numbers have no reference to the number of the Saw or number of teeth to the inch.

A Saw should be set according to the work to be done and not according to the number of points to the inch; in fact, the same Saw might need to be set differently for different purposes.

Face No. 4 of the Taintor Positive Saw Set may be used as a trial face for a Saw for ordinary work in dry wood. Set a few teeth, then look across the face of the Saw to see if the teeth have been moved the right amount. If they have not, find the anvil face that will give the desired amount of set, then complete the setting.

After filing, the teeth should be in line on both sides of the Saw and the groove should be perfectly straight when looking down the length of the Saw from heel to point. These two ways of examining the setting are better than either way alone.

The Taintor Positive Saw Set may be used with the Saw held in the hand or in the hand with one end resting on the bench, or in the clamp. In either case the tool will easily adjust itself to the work to be done, as all parts work in unison. If the setting is done in the clamp the teeth of the Saw should be placed high enough



above the edge of the clamp so that the Saw Set will not touch.

Work from heel to point on both sides of the Saw and raise the Saw Set as it passes from tooth to tooth. By setting from heel to point the tool is not so likely to catch on the teeth.

Filing.

In filing great care is necessary. In case one's eyes are not strong enough to see the points of the teeth clearly, glasses should be used while filing.

Carefully choose your files. They should be straight and evenly cut and straight in the handle. If too large they obstruct the view of the points of the teeth.

When filing keep the teeth of the Saw regular in size. The tendency is to make the ones on the farther side on the first filing too large, the bevel misleading the eye.

After the Saw has been jointed and set, adjust it in the clamp for filing. Place it as low in the clamp as the position chosen for the file will permit. The point of the Saw should be to the left. This position gives to most persons the best view of the teeth while finishing after the Saw has been turned. If, however, experience teaches that the teeth to be finished can be seen better from the other side, file to the right of the clamp first.

The clamp should then be placed in the best light obtainable and at the hight that will give the operator the best view of the teeth. This will vary with different persons. A little below the armpits is found to be right by a good many filers.

Hold the file firmly with the point somewhat elevated at the pitch and bevel decided on.

The filing should be done with the point of the file traveling in the direction of the point of the Saw, cutting the edges of both teeth. This gives the correct form to the teeth and steadies the file, which should be lifted slightly on the return stroke.

The reason for filing toward the point of the Saw is that the file moves in the direction of the setting and of the cutting edge of the teeth, and there will thus be less vibration. If on the contrary the filing is done toward the heel of the Saw the file is cutting against the setting and against the cutting edge of the tool, and the vibration will be sufficient to take the points off the teeth and the cutting edge will be rounded as well as full of fine notches made by the teeth of the file.

If those who advocate filing in the opposite direction (that is, toward the heel of the Saw) will use a magnifying glass in comparing teeth so filed with those filed toward the point, the reason for filing as above recommended will be obvious.

In filing toward the point of the Saw there will be a slight feather edge on the tooth, which may be taken off by running a straight oilstone lightly over the sides of the Saw. If this is not done, however, the feather edge will soon disappear. The feather edge, by the way, is the only argument for filing toward the heel.

File every other tooth. File back on the widest teeth as shown by the size of their points. Make the points on each side of the file the same size, taking care to leave enough of the flat produced by the jointer to be seen. See that the cutting edge of each tooth is sharp before leaving it.

It is well during the progress of the work to occa-

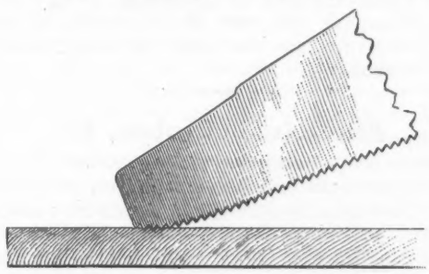
sionally put the file back to the first tooth filed to make sure that the pitch and bevel originally assumed have been maintained. This certainly should be done when it has been necessary to shift the Saw in the clamp or after laying the file down for any cause.

After filing one side of the Saw in the way described turn the Saw "end for end" and file the other side in the same manner, but the point of the teeth must be watched very carefully, for even a small fraction of a stroke of the file, after the tooth has been brought to a point, will reduce its length.

The glint on the point of the tooth, *i. e.*, the reflection on the flattened end produced by the jointing, is the only guide for its length, and after that has been lost further filing will be simply guesswork. If after taking the Saw from the clamp the work is not satisfactory, run the jointer very lightly over the ends of the teeth, and after returning the Saw to the clamp touch them up with the file.

Suggestions.

A cut-off Saw with its point rounding is not so likely to "catch" when starting the kerf, thus preventing the



bending of the Saw and splintering the wood. A kerf can also be more easily started in the center of a plank without boring for it.

Omitting to set one or more teeth opposite to each other at some point along the Saw, or bending them a little inward will clear the kerf when the regular teeth or those fully set do not clear it fast enough.

The teeth of a Rip Saw are usually made finer at its point than further back, so that the Saw will not be "held up" at its start.

Filing the teeth fleaming at the point and for a short distance back like those of a Cut-off Saw will reduce the danger of a "hold up," and this part of the Saw can be used to cut through knots if encountered on the way.

Saws for coarse work, especially those that may be used to cut diagonally across the grain, as for framing rafters, stair carriages, &c., should be filed with considerable fleam with the cutting edge about at right angles to the line of the teeth.

A Compass or Keyhole Saw should have less hook and more fleam than a Rip or Slitting Saw, but more set than a Cut-off Saw.

Requests for Catalogues, Etc.

The trade is given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.

REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:

FROM THEODORE HARMS & SON, Detroit, Mich., whose store was struck by lightning last month, starting a fire which destroyed the upper part of the building and caused considerable water damage to stock.

FROM A. WESTMAN, London, Ont., whose catalogue files were entirely destroyed in a recent fire.

FROM THE WARREN-SMITH HARDWARE COMPANY, Shawnee, Okla., which has been incorporated by K. H. Warren and others with a capital of $20,000 to conduct a Shelf and Heavy Hardware, Stove, Implement, Paint, Sporting Goods, Plumbing and Electrical Supply business.

FROM BALDWIN HARDWARE COMPANY which has engaged in business in Bay Minetta, Ala., carrying Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints, Oils, Sporting Goods and Furniture. The company has just completed a store building.

FROM FRANK R. KENDALL & Co., Morgan Park, Ill., who desire catalogues from manufacturers of Builders' Hardware, Tools, House Furnishing Goods, Stoves, Furnaces, Paints, Oil and Glass, Plumbing and Sheet Metal Work.

FROM H. A. LOTSPEICH, who has engaged in the Hardware, Stove, Implement, Paint and Saddlery business at Minatare, Neb.

FROM HAUX HARDWARE COMPANY, Grand Island, Neb., which has been incorporated with an authorized capital of $15,000, to conduct the Shelf Hardware, Stove and Tinware business.

American Fork & Hoe Company's Catalogue.

A HANDSOME and elaborate new catalogue has been issued by the American Fork & Hoe Company, Cleveland, Ohio. The book is remarkable, not only for its size and scope, but especially for its typographical excellence and the richness of its get-up. It is effectively and tastefully bound, printed in large, clear type on a high grade of calendar paper, and the profuse engravings are of the highest order. Admiration is especially commanded by a number of full page tint plates illustrating the use of the company's different lines of tools. These views partake of the character of nature studies, and are most artistically drawn and colored. There are also excellent views of the factories of the company, with portraits of its officers and managers. All tools are described and listed in full detail, special attention being directed to the "True Temper" trademark, with explanation of the quality for which it stands. A feature of unusual interest and novelty in the arrangement of the catalogue is the incorporation in the page border designs of a marginal index, calculated to facilitate considerably the use of the book in the hands of the trade. As the catalogue lies open one-half of the index appears on the left-hand page, as reproduced in the accompanying illustration, while the balance is similarly printed on the opposite page, so that wherever the book is open a complete index is before the eye. Thus it is possible to turn very quickly from one part of the book to another without referring to a general index. The company is to be congratulated on its catalogue *de luxe*, which will certainly be regarded as one of the most beautiful and artistic in the hands of the trade.

The Goulds Mfg. Company, Seneca Falls, N. Y., has issued a large and striking advertising hanger, on which appear nearly 100 cuts illustrating a part of the company's line of Pumps and Hydraulic Machinery.

Arnold, Hayden & McKee have acquired the business of J. A. Conner in Windsor, Mo., and will handle Shelf and Heavy Hardware.

S. M. Bullington, Sibley, Iowa, has succeeded to the business of Bullington-Ashmore Hardware Company.

OUR ASSOCIATION.

A PAPER READ BEFORE THE TENNESSEE RETAIL HARDWARE ASSOCIATION BY M. A. WALKER, COVINGTON, TENN.

LAST summer, pursuant to call, a number of retail Hardware merchants of the State met in Nashville and, assisted by the able secretary of the National Retail Hardware Association, perfected this organization. What we lacked in numbers we made up in enthusiastic determination to go to work for the Tennessee branch. I am sure all went home feeling benefited and broadened by the association of two days.

When our forefathers came to this country, they formed themselves into associations for protection of the individual. It was in the big or general association that the Declaration of Independence was promulgated, that established the great Association of the United States of America, and it was in those times that we coined such expressions as "In union there is strength" and "United we stand, divided we fall." It was only through association work that they builded so well, and left to us the splendid heritage which we call "the land of the free and the home of the brave." We are building to better the condition of ourselves and the loved ones at home; so let us go about this in the best and most intelligent manner, and that is through our association.

Forefathers' Associations.

The declaration of principles, as outlined in the printed programme, explains fully and open-heartedly the objects of our association and what we stand for. In this day of organization, we buy from organized sellers, pay the freight to organized transportation companies, and we sell the goods to organized farmers. Unless we organize for our protection in the right, we may be run over and flattened out by the steam roller of organized opposition. Join and support our association.

Look Out for the Steam Roller.

I believe that one of the greatest and most direct benefits to be obtained in our association will be the better understanding between competitors in the same town, which will prevent their cut-throat competition against each other, and I think if this meeting has done no more than to bring about such a condition, it has been indeed a success. The party who gets the benefit of this class of price cutting is often not your good customer or your competitor's good customer, who deserves best consideration, but some "shopper," who makes it a business to come to town early, and go from store to store, pricing goods, often conveying the wrong impression as to price your competitor quoted him. I had rather sell goods at less profit all along the line, and have an established price understanding, as far as possible, with my competitor, than be annoyed and harassed by some of these shoppers all day. We could then operate on less clerk hire, or the force could be working in stock.

Better Understanding Between Competitors.

Often a man's business may seem dull and uninteresting to him because of the narrow and contracted view he takes of it. Come to the association meeting; join in what is said and done. Give us your views. Keep the association spirit up after you go home, and this is the way to perpetuate the organization and make it result in good.

It is said of Old Hickory, that, at the battle of New Orleans, when a native came up and reported that the soldiers had appropriated one of his pigs, the old general replied by asking him if he had a gun. The man answered that he had not, whereupon the general called out, "Guard, give this man a gun and put him in the ranks."

Join the Ranks and Get to Work.

His measures were drastic, but we know how well he won the battle. If you are losing interest in your business, trade not what it used to be, catalogue houses bother you, and you haven't that joy you once experienced in business—not making money; if you come to us with your troubles, we tell you to join the association, get in the ranks and go to work.

If you are not informed, you will be surprised to know what good has been accomplished recently through association work. The fight against the iniquitous Parcel Post bill was led by the National Retail Hardware Association, of which our association is an affiliated part; discontinuance of the practice of allowing shippers to paste large advertising signs on the outside of freight cars, and a number of other needed reforms, have been accomplished through association efforts. Last, but by no means least, it helps to raise a man's own business in his own estimation.

Once an humble hod carrier was seen gazing intently on a magnificent cathedral that had cost millions of money and many years to complete, when a tourist remarked on its beauty. The humble hod carrier said, "Yes, and I am proud of it, too." "Why, what interest have you in such a structure?" "Ah," replied the humble hod carrier, "I carried the mortar that holds together one of the corners in the tower"; and so, when we see good results from the efforts of the association, we can each, very proudly, say, "I helped to do that." To the Hardware men of Tennessee, from Carter to Shelby, I say to you, that if you would be healthy, wealthy and wise, join and give your hearty support to our association.

Each Can Do His Part.

Price-Lists, Circulars, Etc.

Manufacturers in Hardware and related lines are requested to send us copies of Catalogues, price-lists, &c., for our Catalogue Department in New York; and at the same time to call attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.

CONSOLIDATED MFG. COMPANY, Toledo, Ohio: Illustrated catalogue covering an extensive variety of drop forgings, which are produced for machine tool builders, and cutlery, gun, bicycle, automobile and electrical appliance manufacturers. The illustrations show a number of stock dies and finished forgings indicating the class of work done.

IMPERIAL BRASS MFG. COMPANY, Chicago: Illustrated catalogue of Imperial Hand, Air or Oil Pumps, Compression Couplings, Tanks, Cocks and other Automobile and Motor Boat Brass Specialties.

HARDWARE SUPPLY COMPANY, Grand Rapids, Mich.: Illustrated booklet descriptive of the Newform line of Garment Hangers.

BARNEY & BERRY, INC., Springfield, Mass.: 1908-1909 catalogue illustrating, with prices, Ice Skates, Ankle Supports, Straps, Keys and Plates, and Leather Cloth Lined Skate Bags. Additions to the line include a Half Hockey Skate, with ribbed blade; a low priced all-clamp key Skate and an Ankle Support for ladies' Skates, with broad heel strap.

GEO. KRAUSE HARDWARE COMPANY, Lebanon, Pa.: Booklet illustrating and listing a variety of fall and winter goods and specialties.

COLT'S PATENT FIREARMS MFG. COMPANY, Hartford, Conn.: Handy illustrated catalogue of Revolvers and Automatic Pistols, giving full detailed information regarding each arm, together with general information of value and a complete illustrated price-list of parts.

ERIEZ STOVE & MFG. COMPANY, Erie Pa.: Illustrated folder of the Eriez Sectional Gas Burners for Ranges and Cook Stoves. The three-way Burner heats the oven and two front lids, and the four-way Burner heats oven, water front and two front lids.

Heaston Bros. have purchased the business of L. D. Gray in Holmesville, Neb., and will handle Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Sporting Goods, Lumber, Coal and Cement.

Else & Hoover, Downs, Kan., have sold their Hardware, Stove, Implement, Paint and Sporting Goods business to John A. Dick, who has moved it to Luray, Kan.

POINTERS ON HARDWARE FREIGHTS.

THE merchant who pays freight bills without checking them to see that they are correct will lose a considerable sum of money in the course of a year. This is particularly true in the Hardware trade. Hardware is shipped at four or five classes of rates in carload and in less than carload lots, and one shipment may include all of these classes. The entire shipment may be billed at the highest rate, when, in many cases, each class of goods should be billed at the rate provided for it. When articles of two or more classes are packed in one box or case, the rules of the railroads provide that the rate charged shall be that of the article taking the highest class, but where they are packed in separate boxes each box or package should pay the rate of the article which it contains, provided the shipment amounts to 100 lb. or more.

Checking Freight Bills a Profitable Precaution.

A few illustrations will show the wide variation in rates on articles handled by Hardware merchants. Bird Cages and light bulky articles pay three times the first-class rate in the Official Classification, which covers the Northern States east of the Mississippi. Stove Pipe in bundles is rated "D1," or double the first-class rate, but when crated pays one and one-half first class. Milk and Garbage Cans, Furnace Pipe and other articles of the same bulky character pay one and one-half first class. On the other hand, Bolts, Nails, Wire in coils and other heavy articles are rated at fourth class. The first class rate is usually double the fourth class rate.

Wide Variation in Rates on Hardware Articles.

Any merchant who has not looked into the question of rates on small shipments could well spend an hour or two on a rainy day in looking over a copy of the railroad classification, which can usually be obtained from the local agent. Many economies may be found in placing orders so as to take advantage of the best rates. The railroads, for example, make a minimum charge of the first class rate on 100 lb., provided this is not less than 25 cents, so that it costs no more to ship 100 lb. than 25 or 50 lb. Where an order is for more than 100 lb. there is economy in a mixed order in having enough of each class to make a separate box or package, so that each class will be charged at the proper rate, instead of all being billed at the highest rate, and there is no point that should be checked more carefully in freight bills than to see that the rules have been followed. The billing clerks of the railroads receive small salaries, and it is easier for them to make one item of a shipment than to separate it into classes.

Bearing Freight Rates in Mind When Placing Orders.

Many mistakes are made by the railroad billing clerks in classifying freight by charging a higher class than the one that should be applied. There are more than 10,000 articles of merchandise listed in the railroad classifications in the different forms in which they are packed and shipped, and more than 1000 of them are handled by Hardware merchants. The billing clerks rely too much upon memory, instead of taking time to check each item by the classification, and it is a little too much for any one to carry in his head at $40 or $50 a month salary.

Railroad Billing Clerks Rely Too Much on Memory.

The theory of railroad classifications is an interesting subject for rainy day consideration. If there were only two railroad stations in the world it would be a simple matter for a railroad to make a separate rate in cents per 100 lb. for every article it handles. There are, however, nearly 100,000 stations in the United States, Canada and Mexico, and the railroads which ship to and from these stations carry some 10,000 different articles of freight. The classification, which is arranged in alphabetical form and carefully indexed, divides all these articles into a few classes. In the Official Classification, which covers the Northern States east of the Mississippi, there are five regular classes, the first being the highest and the fifth the lowest, these covering both carload and less than carload rates. In the Western Classification there are ten classes, five for less than carload shipments, and five for carload freight. The Southern Classification covers the territory south of the Ohio River. These documents are published by the railroads in the form of paper bound books, and are revised and reprinted twice a year. The interstate commerce law makes it unlawful for a railroad to carry any article not mentioned in these classifications, unless a separate "commodity" tariff has been published to provide for it. The law does not require the railroads to furnish shippers copies of these classifications or their tariffs, but they always do it on request as an act of courtesy. The Interstate Commerce Commission has not as yet made any rule requiring the roads to charge shippers for copies of tariffs, but this is one of the possibilities of the future, as the Commission has already discovered for the railroads many sources of revenue which they had overlooked.

The Different Classifications.

The classification has simplified for the railroads the work of publishing rates. Their "book" tariffs of class rates do not mention any commodities, but merely print in parallel columns the class rates that apply to or from any town or group of towns. Every merchant should have a copy of the classification which applies in his territory, but it is scarcely necessary to keep a file of the tariffs. A simpler plan is to spend a few moments with the local agent in copying on a card the class rates which apply to his station from the principal points where the merchant obtains his goods.

Copying Class Rates a Simple Plan.

The law has made a considerable increase in the average rates paid on Hardware by requiring that every word in a classification or tariff shall be enforced to the letter. In former years a box of mixed Hardware could be shipped at the rate of the principal article in it, and the railroads were liberal and accommodating to jobbers in the interpretation of their rules. Now, a few pounds of Plated Cutlery in a box or case raises the rate of the entire contents of the box to first class in eastern territory and one and one-half first class in the Western classification. Both the shipper and the railroad would be liable to prosecution for "false billing" if the letter of the tariff were not observed; and the railroads employ inspectors who open boxes and packages to see that the contents are accurately described.

Letter of Freight Tariff Must Be Observed.

Many controversies arise where the inspector places a different interpretation on a word or clause in the classification. As an instance: A manufacturer of Automobile Lamps had always shipped his goods as Lamps, but a lynx eyed inspector of one of the Transcontinental roads discovered that they complied literally to the description of Navy Searchlights, and the rate was raised to about four times the figure that the shipper had always paid.

An Example of Expensive Interpretation.

It is useless, in these modern days of Government regulation, to ask a railroad for any allowance or exception from the printed classifications and tariffs. The law must be enforced to the letter, regardless of the loss, from a business point of view, which a shipper may sustain. If the charge made is so excessive as to be beyond reason, the Interstate Commerce Commission can correct it, and order a refund on ship-

The Matter of Excessive Charges.

ments made within two years, but the charge must be paid at the time if the tariff requires it.

No one should hesitate, however, to appeal to the Commission. While the eminent commissioners have made many mistakes, and they and their law have caused an enormous amount of trouble in the shipping world, the smallest shipper can get their attention without employing a lawyer, by simply stating the facts and asking reparation. Nearly all of these cases of injustice to an individual shipper are handled as "informal complaints," and if a shipper who makes a complaint does not furnish enough evidence the Commission, through its secretary or one of its staff of auditors, will inform him what is necessary in the way of evidence.

Appeals to the Commission Received with Attention.

Wherever a railroad on a local L. C. L. shipment has charged more than its tariff rate, the consignee should refuse to pay the overcharge. Nearly all railroads authorize their agents to "correct the billing" on local shipments, when there is an overcharge. The agent does not like to do it. He would rather dodge the responsibility by collecting the amount billed and making the merchant work for six months or a year to get the money back from the claim department. Local agents are often mere boys, who have had no business experience, and they cannot afford to take chances with any shipper who might take advantage of them. Most of the railroads have adopted a villainous rule of requiring the agent to pay out of his $40 salary for any mistake that he makes in not charging enough, and it is important to have the boy feel sure that you will protect him if it should afterward prove that you are wrong. These overcharges are usually small in amount, but they are well saved if taken care of at the time, without having to spend $10 to recover 50 cents from the claim department.

Merchant's Duty as to Overcharges.

An Advertising Pay Envelope.

THE accompanying illustration shows the front of a Manila envelope used as an advertising feature by Schroeter Bros. Hardware Company, St. Louis, Mo. It is made of tough paper, being intended primarily as a pay envelope, and a blank will be observed at the top for filling in the employee's name and the numbers of hours worked. The company furnishes the envelopes to factories who employ mechanics, and undoubtedly benefits materially by keeping its name prominently in mind among wage earners of this class. It also uses them in its own establishment for inclosing small articles sold. On the back of the envelope and also on the flap space is found for additional advertising matter which on the copy in hand relates to the Keen Kutter Safety Razor. Other lines are doubtless featured, as the envelopes are printed from time to time.

Pay Envelope, Issued for Advertising Purposes by Schroeter Bros. Hardware Company.

Goddyne & Schindler, Bay City, Mich., Shelf and Heavy Hardware, Stoves, Implements, &c., will occupy a new two-story and basement building 45 x 100 ft. of brick and stone now being erected at 1711-1715 Third street.

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CATALOGUE SYSTEM OF O. C. ALDERMAN.

REFERENCE has previously been made in these columns to the attractive modern Hardware store of O. C. Alderman, Springfield, Mass. Not only is his establishment an example of good arrangement but his business methods are efficient and systematic. The system employed for filing and indexing, catalogues and other printed matter is especially interesting because of its simplicity and practical adaptability to the needs of the average Hardware merchant.

The Furniture Required

is illustrated in Fig. 1, the arrangement, however, for convenience in reproduction being altered somewhat from

Fig. 1.—Catalogue Files of O. C. Alderman, Springfield, Mass.

that actually employed by the firm. It consists of a cabinet of large drawers perhaps 3 ft. wide by 4 ft. high, and several smaller filing drawers, which will be seen on top of the cabinet. Above is shown a section of shelf space, a few feet being required for the accommodation of large bound catalogues. There are also a couple of index drawers, one under "manufacturers" and the other under "goods."

The shelf space referred to is divided into lettered compartments containing three or four books each, which

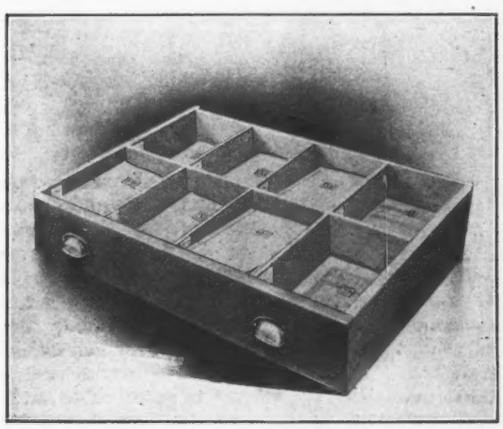


Fig 2.—Compartment Drawer in Cabinet.

are marked with a paster bearing the letter of the compartment in which they belong. This letter is all that need be used in indexing, as in the case of the Disston catalogue on the card reproduced in Fig. 3.

One of the large drawers in the main cabinet is reproduced in Fig. 2. These are numbered consecutively, and are divided into compartments, also numbered, about the size of the average catalogue. As the drawers are perhaps 6 in. deep the compartments will accommodate several books. Each is marked with a paster indicating its place, and similar pasters are used in numbering the compartments, as indicated in the illustration.

A Feature of the System

is that catalogues of manufacturers of the same lines are kept as nearly as possible in the same compartment, thus greatly facilitating comparison, which is frequently necessary. For instance, from the index card giving manufacturers of Screw Drivers (Fig. 3) it will be seen

SUBJECT Drivers Screw

NAME	ADDRESS	DR. NO.	CAT. NO.	PAGE
Brownell & Co	Elizabeth, N.J.			110
H. Disston & Sons	Philadelphia		H	
Enoch Harmer & Co	Shelburne Falls, Mass	1	3	
Goodell-Pratt Co	Greenfield, Mass	1	3	
Hartford Mfg Co	Bridgeport, Conn	1	3	
H. H. Mayher & Co	Shelburne Falls, Mass	1	3	

Fig. 3.—Index Card Referring to Goods.

that the catalogues of four of the six concerns listed are in drawer No. 1, compartment 3. Of the other two, one is the Disston catalogue, which is on the shelf in compartment H, the other is a small booklet, which may be filed in the small drawers appearing on top of the cabinet (Fig. 1), one of which is reproduced separately in Fig. 4.

Small Drawers for Booklets, Circulars, Etc.

These drawers are on the order of vertical files, divided by numbered tab sheets, as indicated. They are

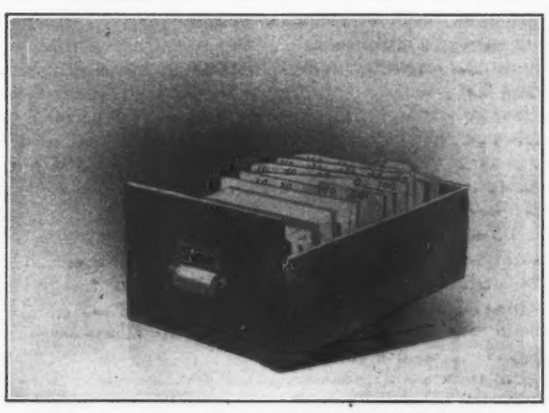


Fig. 4.—File Drawer for Circulars, Booklets, &c.

intended for the accommodation of small booklets, pamphlets, circulars, price-lists, &c. In practice it is found convenient to number the tab sheets by tens, and the drawers are marked on the front to show the range of the numbers which they include.

The description may be concluded with a reference to the card from the manufacturers' index, reproduced

NAME	DR. NO.	CAT. NO.
Goodell-Pratt Co	1	3
ADDRESS	Greenfield Mass	
ARTICLES		
Automatic & Hand Drills		
Bench Drills		
Automatic Screw Drivers		

Fig. 5.—Manufacturers' Index Card.

in Fig. 5. These give the address of the concern, the location of their printed matter on file and a more or less complete list indicating the lines they manufacture, which are handled by the firm.

THE TRAVELING SALESMAN AND HIS DUTY TO HIS CUSTOMER.

A PAPER BY CHARLES F. WEILAND, DALLAS, TEXAS.

THERE are several essentials necessary for success in the relations between the traveling salesman and his customer. There should be a friendly feeling between them. The salesman should be absolutely honest with the customer, and honesty on his part requires honesty on the part of the customer. When this condition prevails there is a tie that binds them together in bonds of friendship and confidence.

Some customers complain that they have been deceived by the salesman, and the very same salesman proclaims in strenuous tones that the customer has been false with him. The question then is, "Who offends the most?" That is, who first practiced to deceive, for there would have been no deceit on either side had not one violated the confidence of the other; so that when discovered the one proceeds to throw the "hooks" into the offending one, and each ever afterward mistrusts the other.

What Is the Remedy

for this condition of affairs, for no salesman or manufacturer permitting deception on the part of the salesman can be successful who practices and becomes accomplished in the arts of lying, for deception is nothing else but a false representation which is made either by spoken words or by remaining silent when one ought to speak, and a false representation made with the intention of being acted upon, no matter how made, is nothing else but a lie. The remedy lies solely in the customer. If the salesman has lied to you and deceived you, it is your duty to cease having anything to do with such a man in any way, either by purchasing goods or in a social relation. The customer holds the key. Stop your patronage with the liar and he will lose his employment.

As a General Rule

a traveling man is honest. If he be false to you he will lie to his employer, and if he lies to his employer he loses his position. As I have already stated, the customer holds the key to the situation. Be honest with the salesman, and if he be false to you have no further dealings with him. This will raise the standard, and if the standard is raised no one benefits so much therefrom as the customer.

Another view of the question is that honesty and fair dealing on the part of both customer and salesman makes the customer's credit better. The head of the factory represented by the salesman cannot make your personal acquaintance, consequently he must, to a great extent, depend upon one of his traveling salesmen, and if his salesman reports on you favorably his report shares equal rank, if not somewhat greater than that of Bradstreet and Dun, and upon it, to a great extent, is the customer's credit based. It is not the duty of the salesman in order to land an order to "knock" his competitor's goods. "Knocking" and malicious lying may secure an order, but in the end retribution will surely follow. If the salesman's goods will not sell upon their merits, pointing out alleged defects in a competitor's goods does not increase the merits of his. They are as good as they are made and no statements make them of greater value, and because the Bamboozle Buggy Company makes a bad buggy does not make your buggy a good one. That firm may produce 1000 bad buggies; this fact does not make your firm produce a good one. It is the duty of the salesman to sell his goods on their merits alone. Sell them as if you expected to sell the same person forever after; don't proceed upon the theory that you will be satisfied if you can only "do" the customer once.

Thus you can see that the duties of the traveling salesman are so closely entwined with that of the customer that a proper discussion of one suggests the other.

Among Many Complaints of the Salesman

is the fact that the customer does not give him a square deal, he is looked upon as a convenient evil, instead of a business man whose time is as valuable and who has appointments to meet as any you have. Give him a square deal, treat him as a business man whose time is valuable. You will save money thereby and make a better bargain. If one of your clerks should treat a customer as some dealers do the salesman (although I am pleased to say that cases of extreme flagrant indifference are rare) you would be put into bankruptcy within 60 days after embarking into business.

Reciprocating Favors.

Another thing. It is proper for the salesman to promise a customer to protect him in a certain territory and sell no one else within those limits. That faithful compliance with this duty on the part of the manufacturer involves an equal duty on the part of the customer. If favorable terms are granted by the manufacturer through these salesmen, the customer should favor the one who favored him. If you have anything to buy, buy it from the ones who favored you, your proved friends. The customer who violates this rule is known among traveling salesmen as a "piker," and his credit is bad, and in the financial stress like the present he is the first to be "called."

A traveling salesman is false to you and his employer if he unloads a big order on you and then crosses the street and sells to your competitors to fight you. If he does this he is not true and fair with you. When he finds that you are not selling enough of his goods, instead of telling you so and protecting you in your unsold stock, goes across the street and sells to a man to fight you, he is false. If he intends not to furnish you any more of his goods he should tell you so in time and let you dispose of your goods, and then sell to the other fellow.

Sporting Goods Window Trim.

IN keeping with the tendency on the part of manufacturers to assist retailers in the sale of their goods, the M. Hartley Company, 313-315 Broadway, New York, sole representative of the Union Metallic Cartridge Company and Remington Arms Company, has just prepared for gratuitous distribution among Hardware merchants and all houses handling Fire Arms, Ammunition and Sportsmen's Supplies, a unique and attractive window trim for use in conjunction with Sporting Goods displays, a reproduction of which is here given. It is lithographed in six colors on strong paper, and is designed

Sporting Goods Window Trim.

for use on the inner side of a store show window, preferably near the center, laterally if the conditions favor it, or at top if necessary. The extreme dimensions are: Width 6 ft., sides each 4 ft. top to bottom and center 2½ ft. The idea is to provide ready for use a sporting scene with suggestive and helpful advertising matter as an accompaniment to a window appropriately dressed with Shot Guns, Rifles, Revolvers, Ammunition and a general line of Hunters' Goods. The artistic and fetching presentation of the subject is relied on to catch the eye of passers-by, so that attention may then be drawn to the seasonable display of the goods shown in the window. While the pictorial trim primarily refers to the goods manufactured by the above companies, it likewise serves as a selling force for anything in the sportsmen's line. The window trim is in two sheets, divided perpendicularly for ease in handling, showing an English setter dog and quail covey on the left, with a moose running through the woods on the right. "Sportsmen's Headquarters" occupies a panel 36 x 6 in. The sheets are fastened on inside of window by the use of pasters sent with the trim, the whole being securely packed in a strong pasteboard tube 37 x 2¾ in.

Campaign Specialties.

The Norvell-Shapleigh Hardware Company, St. Louis, Mo., has brought out some specialties for sale during the Presidential campaign season, three of which are

Fig. 1.—Campaign Pocket Knife to Have Names of Nominees Etched on the Blade.

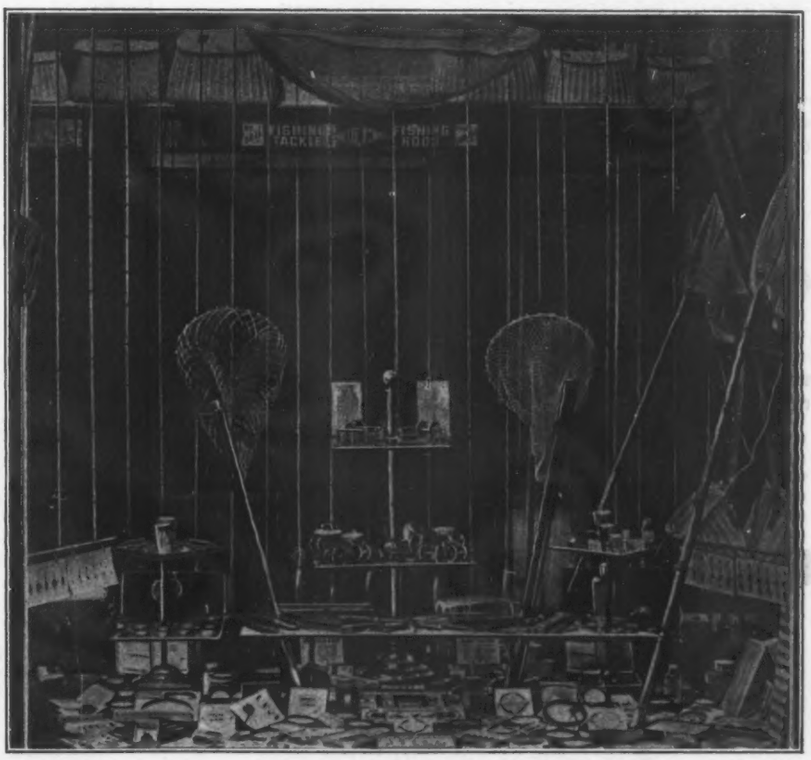
illustrated herewith. Fig. 1 shows a Pocket Knife which is to have the name of the Presidential candidate of either party etched on the blade. The Knives will be furnished with cocobolo, ebony, stag or tortoise shell handles. The whips are enameled in red, white and

Fig. 2.—Party Whips for Either Side.

blue, and bear the pictures of either group of nominees preferred. A merchant would doubtless require a stock of each kind.

Fishing Tackle Window Exhibit.

THE accompanying illustration is reproduced from a photograph showing an effective display installed in one of the windows of its retail sporting goods store by the Clark-Horrocks Company, Utica, N. Y. The window is 12 ft. high, from 6 to 8 ft. wide, and 6 ft. deep. Tne background is glass, with sliding doors at the bottom, but closed in at the top, the Fish Baskets shown in the illustration being supported by a sort of shelf above the slides. The goods in the window comprise an attractive layout of articles usually included in a display of this kind, such as Rods, Reels, Lines, Leaders, landing Bows, Spoons, Artificial Bait, &c.

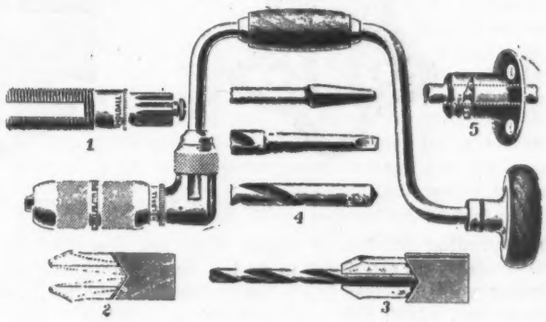


Fishing Tackle Window of Clark-Horrocks Company.

WILLIAM A. CRANSTON, Providence, R. I., secretary of the American Screw Company, died suddenly, September 2, aged about 60 years. He was a native of Providence, and his entire business life was passed with the American Screw Company, in the commercial department, where he was employed for 40 years. From the position of office boy he was promoted through successive stages to secretary, which office he had held for a number of years. He was interested in public affairs, and for several years served as a member of the Providence School Committee. A week before his death he was elected president of the Pawtucket Old Home and Improvement Association, made up of residents of a suburb in which he made his home. He was an Odd Fellow, and was actively interested in the work of the Pawtucket Baptist Church.

Holdall Bit Brace.

The Millers Falls Company, Millers Falls, Mass., has added to its line the bit brace here illustrated, embodying the Holdall chuck, which, it is said, will hold with equal accuracy and tenacity a great variety of shanks, straight or taper, round or square, from 7-64 to ½ in. in diameter. The tool is constructed on carefully studied scientific lines. A feature is the covered ratchet ring. The jaws and ratchet dogs are made from drop steel forgings. The

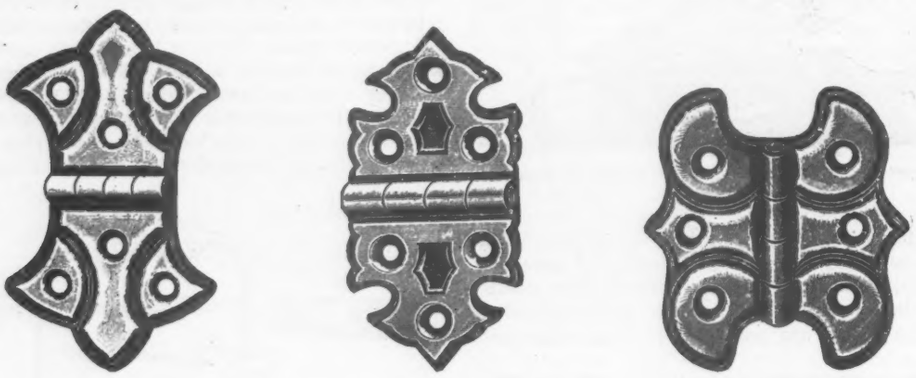


Holdall Brace, Parts and Shanks Accommodated.

shape of the nut is new in design and its construction is strong and calculated to fit the hand. The illustration shows the various parts of the tool, which are indicated by number. One is the socket, made of solid bar steel and said to be unbreakable; 2 shows the jaws, which open exactly parallel unless a tapering shank is to be held, when they adjust themselves to its shape, as shown by the dotted lines, while 3 shows the jaws grasping a ⅜-in. shank twist drill. A few of the styles of shanks which the chuck will hold are shown above No. 4, while 5 illustrates the quill with bearing. Four sizes are made—8, 10, 12 and 14 in. sweep. They are put up one-sixth dozen in a pasteboard box.

Embossed Hinges.

In the accompanying illustrations are shown three new designs of embossed wrought hinges made by the Brainerd Mfg. Company, East Rochester. N. Y. The illustrations are two-thirds size. The hinges are furnished in polished brass, dull brass and old copper, as well as in corresponding finishes of steel. They are described by the company as attractive in design, ornamental, and affording a much better finish for a surface hinge than the flat hinges, which they are intended to supplant. They are packed with or without screws, one and three dozen in a box.



Three Designs of Brainerd Mfg. Company's Embossed Hinges.

Additions to the Barney & Berry's Line.

The skates and ankle support shown herewith are recent additions to the line made by Barney & Berry, Inc., Springfield, Mass. In Fig. 1 is illustrated a half hockey skate with ribbed blade, made only in the manufacturer's highest grade, 3. This is recommended to all classes of skaters who appreciate a light skate, the right form for figure work or graceful skating. The low priced skate F, shown in Fig. 2, has the regular rock blade and key clamp fastening at toe and heel. It is remarked that because this fastening proved so popular in connection with the hockey skates, in order to meet the demand it has been furnished on skate F. The line of ankle supports has been extended to include one suitable to attach to ladies' skates having the broad heel strap, as shown in Fig. 3. To attach the support it is necessary to drill two holes and fasten with the rivets furnished. The point is made that the operating joint of the support is in proper relation to the ankle of the wearer.

Fig. 1.—Half Hockey with Ribbed Blade.

Fig. 2.—Low Priced Rock Blade Skate F.

Fig. 3.—Model B. Ankle Support for Ladies' Ordinary Skates.

The Two-in-One Safety Razor.

A feature of the safety razor here shown is that it uses both the thin wafer blade and the heavier hollow ground blade on the same frame, while the razor is adjustable to a light or close shave by a turn of the handle. No 1, Fig. 1, represents the frame holding a nonflexible wafer blade, and No. 2 shows a hollow ground blade in the same frame. In Fig. 2 the separate parts of the razor are illustrated. A is the hollow ground blade, B the frame, C the handle, D the wafer blade partly inserted in the blade holder, and E the stropper. The device is referred to by the manufacturer as strictly high grade in quality of material, workmanship and finish. The frame is of solid metal, triple silver plated, and is put up in a triple nickel plated metal case, velvet lined. Each set consists of the razor frame, stropper, six wafer blades and one hollow ground blade. The blades are described as being made from the highest grade of imported razor steel, and in manufacturing each blade is handled singly, great care being taken in tempering, hardening, finishing and sharpening each one. The razor is put on the market by the Two-in-One Safety Razor Company, Home Life Building, Washington, D. C.

No. 1. No. 2.

Fig. 1.—The Two-in-One Safety Razor.

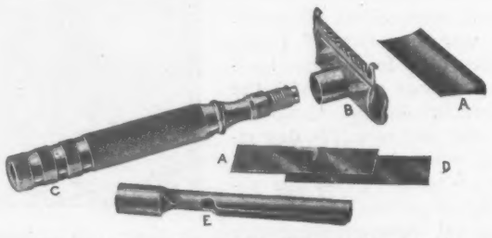


Fig. 2.—Two-in-One Safety Razor Taken Apart.

Combination Cabinets and Benches.

The combination cabinet and combined bench and Lathe illustrated herewith have recently been designed for home and manual training purposes and are

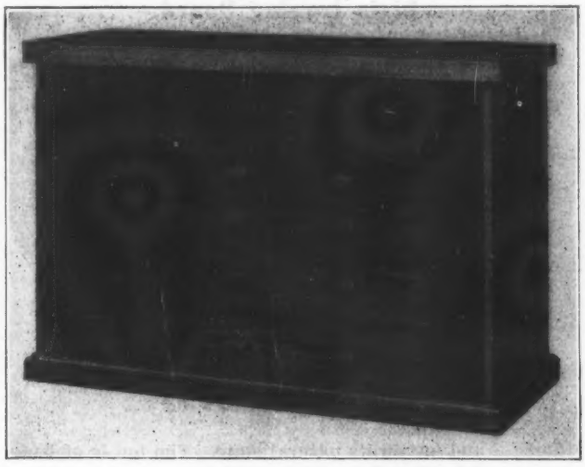


Fig. 1.—Orlock Combination Cabinet, No. 50.

put on the market by the Orr & Lockett Hardware Company, 71-73 Randolph street, Chicago, Ill. The cabinet illustrated in Figs. 1 and 2 is designed especially for those who live in apartment houses, where they have no

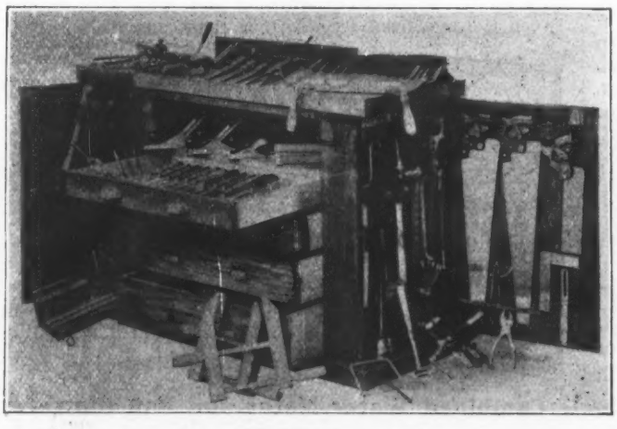


Fig. 2.—Orlock Cabinet with Tools Exposed.

work shop or place to set a bench, and can also be employed as a kitchen table or sideboard. The top of the bench is made of maple strips glued together to prevent

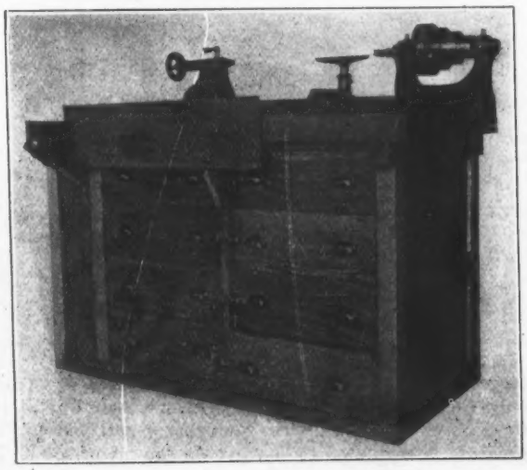


Fig. 3.—Selden's Combined Bench and Lathe.

warping. The cabinet is made of oak, nicely finished in golden oak. The cabinet is 48 in. long, 20 in. wide and 33 in. high. It is made to contain nearly 70 tools, and the shipping weight with tools is 300 lb.; without tools, 200 lb. The combination bench and lathe, Fig. 3, enables one instructor to teach both woodwork and woodturning in the same room, thus economizing time and expense. There are no partitions between the drawers. The locking device insures safety, as no scholar can take his drawer out of the bench and pilfer from below, but the teacher can remove any drawer desired in case a drawer should stick or a pupil forget to bring his key. The drawers are large and commodious. There is a large space under the lathe for turned legs and long pieces, and a cupboard on the wall can be dispensed with and scholars kept at the bench, avoiding confusion.

The Thor Electric Washer and Wringer.

The Hurley Machine Company, 153-159 S. Jefferson street, Chicago, Ill., is offering the electrically operated washing and wringing machine herewith illustrated. The machine, with the aid of the current from an ordinary incandescent lamp socket, does all the work of washing and wringing. It will, the company states, do an ordinary family washing in an hour at a cost for power of 2 cents or less. A 1-16 power motor is employed for running the machine. It is of the inclosed type, which keeps water out and protects it from mechanical injury. The revolving cylinder, Fig. 2, is belt driven, while the wringer is positive drive. All gears are inclosed. The wringer and cylinder operate independently, with control of either at the option of the user. The cylinder is made

Fig. 1.—Thor Electric Washer and Wringer.

of selected wood and contains not a screw or nail head that might stain or rust clothes. Inside are five wooden carriers running the full length of the cylinder. The

Fig. 2.—Cylinder of the Thor Electric Washer.

carriers, with each revolution, are designed to take some of the clothes to the top and then drop them back into the hot suds, spreading them out in a new position each time, so that all parts of the garments may be exposed to the circulating water that pours through the perforations in the surface of the cylinder. It is declared that it is not even necessary to rub the wrist or collar bands when using the machine. A small heater underneath the

machine keeps the water at the right temperature, thus effecting a saving in time, labor and soap. The wringer is heavy, ball bearing, and is started and stopped by simply touching a small knob. The rolls are guaranteed for five years and are designed to wring anything, from dainty laces to heavy woolens or blankets. The simplicity of the machine throughout is especially emphasized by the company.

Lane's Trolley Parlor Door Hangers and Track.

The accompanying illustrations represent new styles of trolley parlor door hangers to be used on special trolley track, put on the market by Lane Brothers Company, Poughkeepsie, N. Y. The line of hangers embraces four

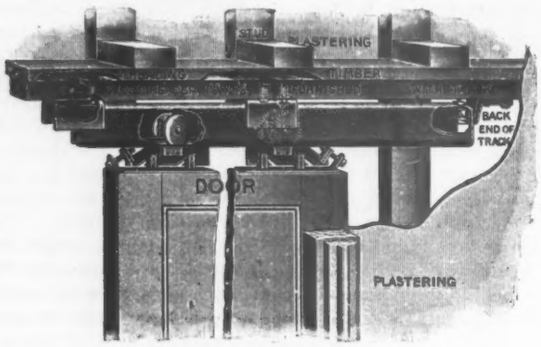


Fig. 1.—Lane's Trolley Parlor Door Hanger and Track.

distinct styles, two of which are shown in Figs. 2 and 3, embracing the rigid and adjustable pendant types. Each one of these hangers is made with either single or double trucks, No. 106 single truck, corresponding in style to No. 107 double truck, and No. 108 single truck corresponding to No. 109 double truck. All wheels are fibre,

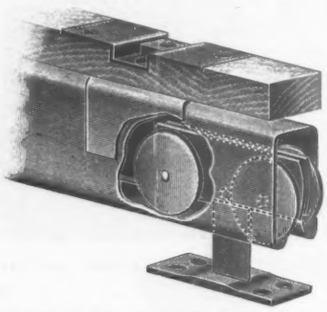


Fig. 2.—Lane's Hanger No. 107.

2 in. in diameter, and are fitted with machined and hardened ball bearings. The distinguishing features of the company's trolley door hanger equipment are the excellence of the bearings and the lateral as well as the

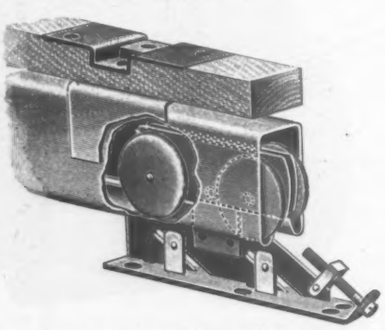


Fig. 3.—Lane's Hanger No. 109.

vertical adjustment of the track. The track is adjustable sidewise on the header, either before or after the door is hung. This feature is referred to as being quite as important as its vertical adjustment, and may be availed of at any time to relieve side binding, so frequent from warping, as well as to compensate for slight error in originally locating the header. The adjustment is accomplished by manipulating the clevis holding screws, accessible from the doorway without removing or changing the adjustment of any other parts. The side adjustment, it is explained, is peculiar to this track.

Dixie Ironing Board.

The John A. Keck Company, Decatur, Ill., is putting on the market the folding ironing board here shown. The woodwork is described as of good material, smoothly

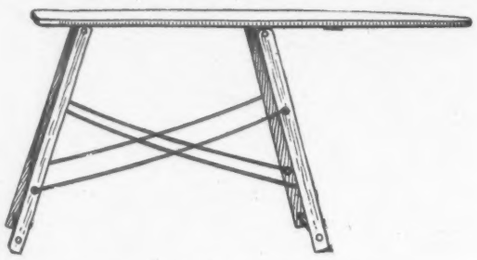


Fig. 1.—Dixie Ironing Board, Set Up.

finished and left in its natural state. The top is of basswood and is 15 x 60 in. in size. The frame stands 32 in. high. The braces, which are shown in the illustrations, are made of coppered wire, which looks well and gives lightness combined with strength. They are said to make the board stand firm however the iron is used. Underneath the board proper are two wooden cleats, on which will be found catches for the dowel. These tend to keep the board from warping and form a brace between the two front legs, so that they cannot slide from

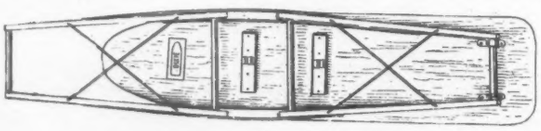


Fig. 2.—Dixie Ironing Board, Folded.

one side of the board to the other. They also make the board adustable, varying its hight from 2 to 3 in. The dowel adjusted to the second cleat makes a long extension, which may be used without lifting the top. When not in use the board can be folded flat and hung by its top dowel to the wall.

Combined Water Motor and Fan Blower.

Frank C. Douds & Co., New Castle, Pa., is manufacturing the turbine water motor and fan blower shown in the accompanying illustration. It combines the company's standard water motor direct connected with its centrifugal fan blower, and is intended for blowing individual

Turbine Water Motor and Fan Blower.

forges and blacksmith fires. For this work it requires only the ordinary city water pressure, and it will perform any similar service requiring equal blast. The pressure is regulated by a valve on the motor inlet. The machine will save a workman the monotonous labor of working a geared fan or bellows, the only expense being the nominal cost of water to run it. Each machine is crated separately and shipped complete ready for attaching to pipes.

The O. K. Gopher Trap.

A late addition made to the line of traps manufactured by the Abingdon Trap Company, Abingdon, Ill., is

The O. K. Gopher Trap.

here illustrated. It is designed for the destruction of the pocket gopher, a pest whose burrowings are particularly annoying to gardeners and farmers. The trap is exceedingly simple in its construction, and is said to be quite effective in disposing of these elusive rodents. The manner of its operation is shown in the accompanying illustration. The dotted lines represent the position of the wire loop when the trap is set. It is held in place by a trigger which is connected with a wire extending downward into the body of the trap and is released when the gopher comes in contact with this wire. The trap is built with box sides, as shown in the illustration, or is furnished uninclosed, without sides, in either of which forms it is said to be equally effective. It is recommended that the trap should be placed in a fresh opening where the gopher has recently come to the surface, which is indicated by the freshness of the dirt thrown out.

WIEDENBECK, DOBELIN & Co., Madison, Wis., jobbers of iron and steel, wagon makers' and blacksmiths' supplies, have recently incorporated with a fully paid up capital stock of $100,000, the officers being T. E. Wiedenbeck, president; Charles W. Dobelin, vice-president; E. Boehmer, secretary; H. J. Brinkhoff, treasurer.

PAINTS, OILS AND COLORS

Animal, Fish and Vegetable Oils—

	₱ gal.
Linseed, State and Western, raw	43 @45
City, Boiled	45 @46
City, Raw	44 @45
Raw, Calcutta, in bbls	70 @71
Lard, Prime, Winter	68 @70
Extra No. 1	49 @52
No. 1	46 @48
Cotton-seed Crude, f.o.b. mill	@..
Summer Yellow, prime	@37½
Summer White	39½@40
Yellow Winter	41 @41½
Tallow, Acidless	56 @58
Menhaden, Brown, Strained	35 @36
Southern	25 @..
Light Strained	35 @36
Bleached Winter	37 @39
Ex. Bleached Winter	39 @41
Cocoanut, Ceylon	₱ lb 6¼@ 6½
Cochin	₱ lb 6⅞@ 7⅛
Cod, Domestic, Prime	38 @40
Newfoundland	40 @42
Red, Elaine	39 @40
Saponified	₱ lb 5¾@ 5⅞
Olive, Yellow	80 @90
Neatsfoot, Prime	55 @58
Palm, Lagos	₱ lb 5¾@ 6

Mineral Oils—

	₱ gal.
Black, 29 gravity, 25@30 cold test	13 @13½
29 gravity, 15 cold test	13½@14
Summer	12½@13
Cylinder, light filtered	20½@21
Dark, filtered	18 @19
Paraffine, 903-907 sp. gravity	14½@15
903 sp. gravity	13½@14
883 sp. gravity	11 @11½
Red	13½@14

Miscellaneous—

Barytes:	
White, Foreign	₱ ton $18.50@20.50
Amer., floated	₱ ton 18.00@20.00
Off color	₱ ton 13.00@16.50
Chalk, in bulk	₱ ton 3.00@ 3.40
China Clay, Imported	₱ ton 11.50@18.00

	₱ gal.
Cobalt, Oxide	₱ 100 lb 1.45@ 2.60
Whiting, Commercial	₱ 100 lb 42 @52
Gilders	₱ 100 lb .55@ .60
Ex. Gilders	₱ 100 lb .60@ .65

Putty, Commercial—₱ 100 lb

In bladders	$1.70 @1.80
In bbls. or tubs	1.20 @1.45
In 1 lb to 5 lb cans	2.65 @2.95
In 12½ to 50 lb cans	1.50 @1.90

Spirits Turpentine—₱ gal.

In Oil bbls	39 @39½
In machine bbls	39½@40

Glue—

	₱ lb
Cabinet	12 @15
Common Bone	7½@ 9
Extra White	18 @24
Fish, liquid, 50 gal. bbls., per gallon	60 @1.20
Foot Stock, White	12 @14
Foot Stock, Brown	9 @11
German Common Hide	10 @12
German Hide	12 @18
French	10 @40
Irish	13 @16
Low Grade	10 @12
Medium White	14 @17

Gum Shellac—

	₱ lb
Bleached, Commercial	24 @28
Bone Dry	30 @35
Button	30 @40
Diamond I	46 @47
Fine, Orange	34 @35
A. C. Garnet	27 @28
G. A. L.	20 @21
Kala Button	18 @19
D. C.	47 @48
Octagon B	39 @40
T. N.	25 @28
V. S. O.	46 @47

Colors in Oil—

	₱ lb
Black, Lampblack	12 @14
Blue, Chinese	36 @46
Blue, Prussian	32 @36
Blue, Ultramarine	13 @16
Brown, Vandyke	11 @14
Green, Chrome	12 @16
Green, Paris	@24
Sienna, Raw	12 @15
Sienna, Burnt	12 @15
Umber, Raw	11 @14
Umber, Burnt	11 @14

White and Red, Lead &c.—

	₱ lb
Lead, English white, in Oil	10⅛@10⅝
Lead, American White:	
Dry and in Oil, 100, 250 and 500 lb kegs	7
Dry and in Oil, 25 and 50 lb kegs	7¼
Dry and in Oil, 12½ lb kegs	7½
In Oil, 25 lb tin pails	7½
In Oil, 12½ lb tin pails	8
In Oil, 1, 2, 3 and 5 lb tin cans, ass't	9
Red Lead and Litharge:	
In 100 lb kegs	7
In 25 and 50 lb kegs	7¼
In 12½ lb kegs	7½
In lots of less than 500 lbs, ½¢ ₱ lb advance over above prices of White and Red Lead and Litharge.	

Lead, American. Terms: On lots of 500 lbs and over, 60 days, or 2% for cash if paid in 15 days from date of invoice.

Zinc, Dry—

	₱ lb
American, dry	5⅛@ 5⅝
Red Seal (French process)	6¾@ 7
Green Seal	7⅛@ 7½
German Red Seal (French process)	6⅝@ 7
Green Seal	7⅛@ 7⅝
White Seal	7⅞@ 8¼
French, Red Seal	8⅛@ 8⅞
Green Seal	10⅝@10⅞

Dry Colors—

	₱ lb
Black, Carbon	6½@10
Black Drop, American	3½@ 8
Black Drop, English	5 @15
Black, Ivory	16 @20
Lamp, commercial	4 @ 6
Blue, Celestial	4 @ 6
Blue, Chinese	31 @33
Blue, Prussian	29 @31
Blue, Ultramarine	3½@15
Brown, Spanish	½@ 1
Carmine, No. 40	$3.10@3.25
Green, Chrome, ordinary	3½@ 5
Green, Chrome, pure	17 @25
Ocher, American	₱ ton $8.50@16.00
American Golden	2¼@ 3¼
French	1¼@ 2
Foreign Golden	3 @ 4
Orange Mineral, English	10 @12
French	12¾@13
German	12 @13
American	9 @10
Red, Indian, English	4½@ 6
American	3 @ 3¼
Red, Turkey, English	4 @10
Red, Tuscan, English	7 @10
Red, Venetian, Amer.	₱ 100 lb $0.50@1.25
English	₱ 100 lb $1.15@1.60
Sienna, Italian, Burnt and Powdered	3 @ 9
Italian, Raw, Powdered	3 @ 7
American, Raw	1½@ 2
American Burnt and Pow'd	1½@ 2
Talc, French	₱ ton $18.00@25.00
American	₱ ton 15.00@25.00
Terra Alba, French	₱ 100 lb .90@ 1.00
English	₱ 100 lb .80@ 1.00
American	₱ 100 lb, No. 1. .75@ .80
American	₱ 100 lb, No. 2. .60@ .65
Umber, T'key, Bnt, & Pow.	2¾@ 3
Turkey, Raw and Powdered	2¾@ 3
Burnt, American	1½@ 2
Raw, American	1½@ 2
Yellow, Chrome, Pure	13¾@15
Vermilion, American Lead	7 @25
Quicksilver, bulk	65 @..
Quicksilver, bags	@66
English, Imported	65 @70
Chinese	$0.90@1.00

THE IRON AGE

The oldest paper in the world devoted to the interests of the Hardware, Iron, Machinery and Metal Trades, and a standard authority on all matters relating to those branches of industry.

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Current Hardware Prices.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33⅓ @ 33⅓ & 10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1907, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—"The Iron Age Standard Hardware Lists" contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters, Blind—
Columbian and Domestic....33⅓%
North's 10%
Upson's Patent, ₱ gro., $29.90....10%
Zimmerman's—See Fasteners, Blind.

Window Stop—
Ives' Patent....35%
Ives' Stop Bead Screws and Washers 10%
Taplin's Perfection....35%

Ammunition—See *Caps, Cartridges, Shells, &c.*

Anti-Rattlers—
Fernald Mfg. Co, Burton Anti-Rattlers, ₱ doz. pairs, Nos. 1, $0.75; 2, $0.80; 4, $1.00; 5, $0.50.
Fernald Quick Shifter, ₱ doz. pairs ....$2.00@$3.00

Anvils—American—
Eagle Anvils....₱ lb @8 ¢
Hay-Budden, Wrought....9½@9¾ ¢
Trenton ....₱ lb 9½@9¾ ¢

Imported—
Swedish Solid Steel Sisco, Superior, ₱ lb....10@10½ ¢
Peter Wright & Sons, ₱ lb, 81 to 349 lb, 11¢; 350 to 600 lb, 11½ ¢.

Anvil, Vice and Drill—
Millers Falls Co., $18.00....15&10%

Apple Parers—See *Parers, Apple, &c.*

Aprons, Blacksmiths'—
Livingston Nail Co....10%

Augers and Bits—
Com. Double Spur....75&10@80%
Jennings' Patn., Bright.65&10@70%
Black Lip or Blued...65@65&5%
Boring Mach. Augers....70%
Car Bits, 12-in. twist....40&10%
Ford's Auger and Car Bits....40&5%
Ft. Washington Auger Co., Conard's 35%
Forstner Pat. Auger Bits....25%
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings' list, 25&7½%
No. 30, R. Jennings' list....50%
Russell Jennings'....25&10&2½%
L'Hommedieu Car Bits....15%
Mayhew's Countersink Bits....45%
Pugh's Black....30%
Pugh's Jennings' Pattern....35%
Snell's Auger Bits....60%
Snell's Bell Hangers' Bits....60%
Snell's Car Bits, 12-in. twist....60%
Snell's King Auger Bits....50%
Swan's ....65&10@70%
Swan's, Jennings' Pattern....50%
Wright's Jennings' Bits....50%

Bit Stock Drills—See *Drills, Twist.*

Expansive Bits—
Clark's Pattern, No. 1, ₱ doz., $26; No. 2, $18....60&10%
Ford's, Clark's Pattern...60&5&60&10%
C. E. Jennings & Co., Steer's Pat..25%
Lavigne Pat., small size, $18.00; large size, $26.00....60&10%
Swan's 60%

Gimlet Bits—
Per gro.
Common Dbl. Cut....$3.00@3.25
German Pattern, Nos. 1 to 10, $4.75; 11 to 13, $5.75

Hollow Augers—
Bonney Pat., per doz..$5.50@6.00
Ames ....20&10%
Universal 20%

Ship Augers and Bits—
Ship Augers....40&10@—%
Ford's ....33⅓&5%
C. E. Jennings & Co.:
L'Hommedieu's 6%
Watrous' ....33⅓&7½%
Snell's 48%

Awl Hafts—See *Handles, Mechanics' Tool.*

Awls—
Brad Awls:
Handled ....gro. $2.75@3.00
Unhdled, Shldered...gro.63@66¢
Unhandled, Patent..gro.66@70¢
Peg Awls:
Unhandled, Patent..gro. 31@34¢
Unhdled, Shldered..gro. 65@70¢
Scratch Awls:
Handled, Com...gro. $3.50@4.00
Handled, Socket.gro.$11.50@12.00

Awl and Tool Sets—See *Sets, Awl and Tool.*

Axes—
Single Bit, base weights: Per doz.
First Quality....$4.75@5.00
Second Quality....$4.25@4.50
Double Bit, base weights:
First Quality....$7.00@7.50
Second Quality....$6.50@6.75

Axle Grease—
See *Grease, Axle.*

Axles—
Iron or Steel.
Concord, Loose Collar...4¼@4½¢
Concord, Solid Collar....4½@5 ¢
No. 1 Common, Loose...3½@4 ¢
No. 1½ Com., New Style..4¼@4¾¢
No. 2 Solid Collar....4¼@4¾¢
Half Patent:
Nos. 7, 8, 11 and 12....70%
Nos. 13 to 14....70%
Nos. 15 to 18...70&10@70&10&5%
Nos. 19 to 22...70&10@70&10&5%

Boxes, Axles—
Common and Concord, not turned ....lb., 5@6¢
Common and Concord, turned, lb., 6@7¢
Half Patent....lb., 9½@10¢

Bait—
Fishing—
Hendryx:
A Bait....20%
B Bait....25%
Competitor Bait....20&5%

Balances—
Sash—
Caldwell new list....50&10%
Pullman ....50&10%

Spring—
Light Spring Balances..60@60&5%
Chatillon's:
Light Spg. Balances....50@50&10%
Straight Balances....40@40&10%
Circular Balances....50&10%
Large Dial....30%

Barb Wire—See *Wire, Barb.*

Bars—
Crow—
Steel Crowbars, 10 to 40 lb.... per lb., 2¼@2½¢

Towel—
No. 10 Ideal, Nickel Plate..₱ gro. $8.50

Beam, Scale—
Scale Beams....40%
Chattillon's No. 1....30%
Chatillon's No. 2....40%

Beaters,
Carpet—
Holt-Lyon Co.:
No. 12 Wire Coppered ₱ doz. $0.80; Tinned $0.85
No. 11 Wire Coppered ₱ doz. $1.15; Tinned $1.20
No. 10 Wire Tinned....₱ doz. $1.50

Beaters Egg—
Dover Stamping & Mfg. Co.:
Genuine Dover, per gro., No. 1, Tumbler Size, $7.50; No. 2, Family Size, $7.50; No. 3, Extra Family Size, $24.00; No. 4, Hotel Size, $30.00.
Holt-Lyon Co.:
Holt, per doz., No. 5, Jap'd. $0.80; No. A, Jap'd, $1.15; No. B, Jap'd, $1.85; No. 6, Jap'd, $1.65.
Lyon, Jap'd, per doz., No. 2, $1.35.
Taplin Mfg. Co.:
Improved Dover, per gro., No. 60, $6.00; No. 75, $6.50; No. 100, $7.00; No. 102, Tin'd, $8.50; No. 150, Hotel, $15.00; No. 152, Hotel Tin'd, $17.00; No. 200, Tumbler, $8.50; No. 202, Tumbler Tin'd, $9.50; No. 300, Mammoth, per doz., $25.00.

Bellows—
Blacksmith, Standard List:
Split Leather....60&10@65%
Grain Leather....50@50&10%

Hand—

Inch..	6	7	8	9	10
Doz..	$5.00	5.50	6.00	6.50	7.50

Molders—

Inch..	10	12	14	16	
Doz..	$7.50	9.00	12.00	15.00	

Net Prices.

Bells—
Cow—
Wrought Cow Bells....75%
Jersey ....75&10%
Texas Star....50%

Door—
Home, R. & E. Mfg. Co.'s....55&10%

Hand—
Polished, Brass....60@60&10%
White Metal....60@60&10%
Nickel Plated....50&10%
Swiss ....50&10%
Cone's Globe Hand Bells....33⅓@35%

Miscellaneous—
Farm Bells....lb., 2¼@2½¢
Church and School....60@60&10%

Belting—
Leather—
First Quality, Ex. Hy., Strictly Short Lap....60&10%
Standard ....70&10@70&10&5%
Light Double....75&10%
Cut Leather Lacing..50&10@60%
Leather Lacing Sides, per sq. ft. 22@23¢

Rubber—
Competition (Low Grade), 70&10@75%
Standard ....60&10@70%
Best Grades....40&50%

Bench Stops—
See *Stops, Bench*

Benders and Upsetters, Tire—
Green River Tire Benders and Upsetters 20%

Bicycle Goods—
John S. Leng's Son & Co.'s 1908 list:
Chain, Parts, Spokes....30%
Tubes 60%

Bits—
Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

Blocks
Tackle—
Common Wooden....75@75&5%
B. & L. B. Co.:
Boston Wood Snatch, 50%; Eclipse Steel, 75%; Hollow Steel, 50&10%; Star Wire Rope, 50%; Tarbox Metal Snatch, 50%; Tarbox New Style Steel, 50&10%; Wire Rope Snatch, 50%.
Lane's Patent Automatic Lock and Junior 30%
See also Machines, Hoisting.

Boards, Stove—
Paper and Wood Lined....55%
Embossed 55%

Boards, Wash—
See *Washboards.*

Bobs, Plumb—
Keuffel & Esser Co....33⅓&10%

Bolts
Carriage, Machine, &c.—
Common Carriage (cut thread):
⅝ x 6 and smaller..75&5@—%
Larger and longer....70@—%
Phila. Eagle, $3.00 list...80@—%
Bolt Ends....70@—%
Machine (Cut Thread):
⅜ x 4 and smaller..75&10@—%
Larger and longer....70@—%

Door and Shutter—
Cast Iron Barrel, Japanned, Round Brass Knobs:

Inch ...	3	4	5	6	8
Per doz..	$0.30	.35	.45	.60	.80

Cast Iron Spring Foot, Jap'd:

Inch	6	8	10
Per doz....	$1.20	1.50	2.25

Cast Iron Chain, Flat, Japanned:

Inch	6	8	10
Per doz....	$1.00	1.40	1.65

Cast Iron Flat Shutter, Jap'd, Brass Knobs:

Inch	6	8	10
Per doz....	$0.75	.95	1.25

Wrought Barrel Japanned, 80&10@80&10&5%
Barrel Bronzed....60&10%
Spring ....70&10@70&10&10%
Shutter ....50&5@50&10&5%
Square Neck....75@75&10%
Square ....70&10&10@80%
Ives' Mortise....10%
Ives' Wrought Metal....10%

Expansion—
F. H. Evans' Crescent....40@60%
Richards Mfg. Co....55&10%
Star Expansion Bolt Co.:
Star, Lag Screw Type..60&10&5&2½%
Star, Wood Screw Type....40%
Star, Machine, Single Wedge....60%
Star, Machine, Double Wedge....60%
Steward & Romain Mfg. Co.:
Style No. 13, Double....60%
Style No. 1, Single....60%
Style No. 100, Dbl. Jaw, Single..55%
Lag Screw....66⅔%

Plow and Stove—
Plow ....65&5@70%
Stove ....85@85&5%

Tire—
Common Iron....85@85&5%
Norway Iron....85@85&5%
American Screw Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84...82½%
Bay State, list Dec. 28, '99....80%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84...82½%
Eclipse, list Dec. 28, '99....80%
Russell, Burdsall & Ward Bolt & Nut Co.:
Empire, list Dec. 28, '99....80%
Norway Phila., list Oct. '84....80%
Eagle 82½%
Shelton Co.:
Tiger Brand, list Dec. 28, '99....80%
Phila., Eagle, list Oct. 16, 1884..82½%
Upson Nut Co.:
Tire Bolts....72½%

Borers, Bung—
Borers Bung, Ring, with Handle:

Inch....	1¼	1½	1¾	2
Per doz...	$4.80	5.60	6.40	8.00
Inch....	2¼	2½		
Per doz....	$8.65	11.50		

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.75; No. 3, $2.50 each....25%

Boxes, Mitre—
C. E. Jennings & Co....25%
Langdon, New Langdon and Langdon Improved, 20&10%; Langdon Acme ....15&10%
Perfection 40%
Seavey 45%

Braces—
Comman Ball, American....$1.50
Barber's ....50&10&10@60&10%
Fray's Genuine Spofford's....60%
Fray's No. 61, 166, 206, 614....50%
C. E. Jennings & Co....50&5%
Mayhew's Ratchet....60%
Mayhew's Quick Action Hay Pat..50%
Millers Falls Drill Braces....25&10%
P., S. & W. Co., Peck's Pat....60&10%

Brackets—
Wrought Steel..75&10@75&10&10%
Bradley Metal Clasp...80&10@80&10&5
Griffin's Pressed Steel....75@75&10%
Griffin's Folding Brackets....70&10%
Taplin Victor Handy Egg Beater Bracket ....₱ doz. $1.50

Bright Wire Goods—
See *Wire and Wire Goods.*

Broilers—
Kilbourne Mfg. Co....75&20%
Wire Goods Co....75%

Buckets, Galvanized —
M'fr's list, price per gross.

Quart..	10	12	14	
Water, Reg...	26.85	29.50	33.50	
Water, Hvy...	45.35	48.00	52.00	
Fire, Rd. Btm..	32.00	34.65	38.65	
Well	37.35	41.35	45.35	

10&7½&5&5%

Bull Rings—See *Rings, Bull.*

Butts—
Brass—
Wrought. High List, Oct. 26, '06.55%
Cast Brass, Tiebout's....40%

Cast Iron—
Fast Joint, Broad....40&10@50%
Fast Joint, Narrow...40&10@50%
Loose Joint....70&10@75%
Loose Pin....70&10@75%
Mayer's Hinges....70@70&5
Parliament Butts....70@70&5

Wrought Steel—
Bright.
Light Narrow, Light Reversible ....70&5%
Reversible and Broad..70&5%
Loose Joint, Narrow, Light Inside Blind, &c....70%
Back Flaps, Table Chest..65%
Japanned.
Light Narrow, Loose Pin. 40&5%
Light Narrow, Ball Tip..60%
Broad ....40&5%
Steeple Tipped....70%
Ball Tipped....70%

Extra, 10

Cages, Bird—

Hendryx Brass: Series 3000, 5000, 1100, net list; 1200, 15%; 200, 300, 900 ..... 30%
Hendryx Bronze: Series 700, 800.... 30%
Hendryx Enameled..... 35%

Calipers—See *Compasses.*

Calks, Toe and Heel—

Blunt, 1 prong, per lb.....4@4½¢
Sharp, 1 prong, per lb...4½@5¢
Burke's, 1 pg. Blunt Toe, 3¾¢; 2 pg. Blunt Toe, 4¾¢; 1 pg. Sharp Toe, 4¼¢; 2 pg. Sharp, 4¾¢; Blunt Heel, 4¼¢; Sharp Heel.....4¾¢
Lautier, Blunt, 4@4¼¢; Sharp, 4½@4¾¢
Perkins', Blunt, ℔ lb, 3.65¢; Sharp, 4.15¢

Can Openers—

See *Openers, Can.*

Caps, Percussion—

Eley's E. B.....52@55¢
G. D.....per M 34@35¢
F. L.....per M 40@42¢
G. E.....per M 48@50¢
Musket .....per M 62@63¢

Primers—

Berdan Primers, $2 per M..20&5%
Primer Shells and Bullets..15&10%
All other primers per M..$1.52@1.60

Carpet Stretchers—

See *Stretchers, Carpet.*

Cartridges—

Blank Cartridges:
32 C. F., $5.50.....10&5%
38 C. F., $7.00.....10&5%
22 cal. Rim, $1.50.....10&5%
32 cal. Rim, $2.75.....10&5%
B. B. Caps, Con. Ball, Swgd..$1.90
B. B. Caps, Round Ball.....$1.40
Central Fire.....25%
Target and Sporting Rifle..15&5%
Primed Shells and Bullets..15&10%
Rim Fire, Sporting.....50%
Rim Fire, Military.....15&5%

Casters—

Bed .....65&10@70%
Plate .....60&5@60&10%
Philadelphia .....70&1.@75%
Acme, Ball Bearing.....35%
Gem (Roller Bearing).....70&10&10&5%
Steel Gem (Roller Bearing).....70%
Standard Ball Bearing.....45%
Yale (Double Wheel) low list...40&10%

Cattle Leaders—

See *Leaders, Cattle.*

Chain, Proof Coil—

American Coil, Straight Link:

3-16	¼	5-16	⅜	7-16	½	⅝
$8.15	5.55	4.60	3.95	3.75	3.65	3.55

⅝-⅞-1 1⅛ to 1¼ inch.
$3.55 3.55
In cask lots, deduct 25¢.
German Coil.....60@60&5%
German Pattern Coil:
6-0 to 1.....70&5@70&10%
2 and 3..60&10&10@60&10&10&5%
4, 5 and 6.....50&10@50&10&5%

Halter—

Halter Chains.....60&5@60&10%
German Pattern Halter Chains list July 24, '97....60&10&5@70%
Covert Mfg. Co.:
Halter ..... 55&5%

Cow Ties—

See *Halters and Ties.*

Trace, Wagon, &c.-

Traces, Western Standard: 100 pr.
6½—6-3, Straight, with ring..$28.00
6½—6-2, Straight, with ring..$29.00
6½—8-2, Straight, with ring..$32.00
6½—10-2, Str'ght, with ring..$37.00
NOTE.—Add 2c per pair for Hooks Twist Traces: add per pair for Nos. 2 and 3, 2c; No. 1, 3c; No. 0, 4c to price of Straight Link.
Eastern Standard Traces, Wagon Chain, &c...60&10@60&10&5%

Miscellaneous—

Jack Chain, list July 10, '93:
Iron .....60&10&7½%
Brass 65%
Safety and Plumbers' Chain..75%
Gal. Pump Chain....lb., 4½@5%
Bridgeport Chain Co.:
Triumph Halter and Coil.35&2½@40%
Triumph Dog.....50&10@60%
Brown Halter and Coil....45@50&5%
Covert Mfg. Co.:
Breast, Halter, Heel, Rein, Stallion 40%
Oneida Community:
American Halter, Dog and Kennel Chains .....35&2½@40%
Niagara Dog Leads and Kennel Chains .....45@50&5%
Wire Goods Co.:
Dog Chain.....70%
Universal Dbl. Jointed Chain....70%

Chain and Ribbon, Sash—

Oneida Community:
Steel Chain.....60%
Pullman:
Bronze Chain, 60%; Steel Chain, Coppered .....60&10%
Sash Chain Attachments, per set..8¢
Aluminoy Sash Ribbon, per 100 ft. .....$2.00@$5.00
Sash Ribbon Attachments, per set..8¢

Chalk—

Carpenters' Blue.....gro., 50¢
Carpenters' Red.....gro., 50¢
Carpenters' White.....gro., 40¢

Checks, Door—

Bardsley's 45%
Pullman, per gro.....$54.00
Russwin 33⅓%

Chests, Tool—

American Tool Chest Co.:
Boys' Chests, with Tools.....55%
Youths' Chests, with Tools.....40%
Gentlemen's Chests, with Tools..30%
Farmers', Carpenters, etc., Chests, with Tools 20%
Machinists' and Pipe Fitters' Chests, Empty.....45%
Tool Cabinets.....45%
C. E. Jennings & Co.'s Machinists' Tool Chests.....7½%

Chisels—Socket Framing and Firmer

Standard List.....80&10@—%
Buck Bros.....30%
C. E. Jennings & Co.:
Socket Firmer No. 10.....25&7½%
Socket Framing No. 15.....25&7½%
Swan's .....66⅔@70%
L. & I. J. White & Co.....30@30&5%

Tanged—

Tanged Firmers.....30&5@35%
Buck Bros.....30%
C. E. Jennings & Co. Nos. 191, 181..25%
L. & I. J. White Co.....25&5%

Cold—

lb.
Cold Chisels, good quality..13@15¢
Cold Chisels, fair quality..11@12¢
Cold Chisels, ordinary.... 9@10¢

Chucks—

Almond Drill Chucks.....35%
Almond Turret Six-Tool Chuck....40%
Beach Pat, each $8.00.....35&5%
Empire 25%
Blacksmiths' 25%
Jacobs' Drill Chucks.....35%
Pratt's Positive Drive.....25%
Skinner Lathe Chucks:
Independent 35%
Universal, Reversible Jaws.....35%
Universal, Com. Style Jaws.....40%
Combination, Reversible Jaws....35%
Combination, Com. Style Jaws...40%
Round Body or Box Body, 2 Chuck Jaws 25%
Geared Scroll Chucks.....25%
Drill Chucks:
New Model, 25%; Geared Pattern, 25%; Skinner Patent, ...25%
Positive Drive.....40%
Planer Chucks.....20%
Standard 45%
Drill Press Vises.....30%
Face Plate Jaws.....35%
Standard Tool Co.:
Improved Drill Chuck.....45%
Union Mfg. Co.:
Combination, Nos. 1, 2, 3, 4, 5, 6, 7, 8 and 17, 40%; No. 21.....35%
Scroll Combinations, Nos. 83 and 84 .....30%
Geared Scroll, Nos. 33, 34 and 35..25%
Independent Iron, Nos. 18 and 318..35%
Independent Steel, No. 64.....25%
Union Drill. Nos. 000, 00, 100, 101, 102, 103, 104.....35%
Union Czar Drill.....25%
Universal, 11, 12, 16, 17, 13, 14, 15..40%
Universal No. 42.....35%
Iron Face Plate Jaws, Nos. 28, 30, 48 and 50.....35%
Steel Face Plate Jaws, Nos. 70 and 72 .....30%
Westcott Patent Chucks:
Lathe Chucks.....50%
Little Giant Auxiliary Drill.....50%
Little Giant Double Grip Drill...50%
Little Giant Drill, Improved.....50%
Oneida Drill.....50%
Scroll Combination Lathe.....50%
Whitaker Mfg. Co.:
National Drill.....25%

Clamps—

Adjustable Hammers.....20@20&5%
Carriage Makers', Star, P., S. & W. Co. 50%
Besly, Parallel.....33⅓&10%
Myers' Hay Rack.....50%
Lineman's Swedish Neverturn.....65%
Wood Workers' Hammers.....40&10%
Saw Clamps, see Vises, Saw Filers'

Cleaners, Drain,

Iwan's Champion, Adjustable.....50%
Iwan's Champion, Stationary.....40%

Sidewalk—

Star Socket, All Steel..℔ doz. $4.05 net
Star Shank, All Steel..℔ doz. $3.24 net
W. & C. Shank, All Steel, ℔ doz., 7½ in., $3.00; 8 in., $3.25.

Cleavers, Butchers'—

Foster Bros.....30%
Fayette R. Plumb.....30%
L. & I. J. White Co.....30%

Clippers, Horse and Sheep—

Chicago Flexible Shaft Co.:
1902 Chicago Horse, each..$10.75
20th Century Horse, each...$5.00
Lightning Belt Horse, each.$15.00
Chicago Belt Horse, each..$20.00
Stewart's Enclosed Gear Roll Bearing Horse, each.....$6.75
Stewart's New Model Sheep Shearing Machine, each.$12.75
Stewart Enclosed Gear Shearing Machine, No. 8, each..$9.75
} 20%

Clips, Axle—

Regular Styles, list July 1, '05, 80&80&10%

Cloth and Netting, wire —See *Wire, &c.*

Cocks, Brass—

Hardware list:
Plain Bibbs, Globe, Kerosene, Racking, Liquor, Bottling, &c 75%
Compression Bibbs.....70%

Coffee Mills—

See *Mills. Coffee.*

Collars, Dog—

Nickel Chain, Walter B. Stevens & Son's list.....40%
Leather, Walter B. Stevens & Son's list 40%

Compasses, Dividers, &c.

Ordinary Goods.....70&10@75%

Conductor Pipe,—

L. C. L. to Dealers:

	Gal. Steel.	Charcoal.
Northeastern.	*70&10%*	*50&10&7½%*
Eastern	*75%*	*50&10&7½%*
Pittsburgh	*75&10&5%*	*60%*
Central	*75&10%*	*60%*
Northwestern.	75&7½%	60%
Western	*70&12½%*	*50&12½%*
Tennessee	*70&10%*	*50&12½%*
Southern	*70%*	*50&12½%*
Southwestern.	*70%*	*50&5%*

Terms, 60 days: 2% cash 10 days. Factory shipments generally delivered.
See also Eave Troughs.

Coolers, Water—

L. & G. Mfg. Co.:

Gal.	2	3	4	6	8
Galvanized, ea.	$1.85	$2.00	$2.25	$2.90	$3.90
Galvanized, Lined, side handles, Gal.	2	3	4	6	8
Each	$1.95	$2.15	$2.40	$3.30	$4.15
White Enameled					10%
Agate Lined					10%

Coppers' Tools—

See *Tools, Coopers'.*

Coppers, Soldering—

Soldering Coppers, 3 lb. to pair and heavier, 20¢; lighter than 3 lb. to pair.....22¢

Cord— Sash—

Braided, Drab.....lb. 35¢
Braided, White, Com., Nos. 8 to 12, 20¢; No. 7, 20½¢; No. 6, 21½¢. In lots of 12 doz. or over, 1 cent less per pound.
Cable Laid Italian, lb., No. 18..37¢
Italian, lb., A, No. 18, 25¢; B, 22¢
Common India.....lb..11@11½¢
Cotton Sash Cord, Tw'ted..18@20¢
Patent Russia.....lb....20¢
Cable Laid Russia.....lb...21¢
India Hemp, Br'd'd.....lb...21¢
India Hemp, Twisted...lb..13@14¢
Patent India, Twisted..lb...17¢
Pearl Braided, cotton, No. 6, ℔ lb. 20½¢; No. 7, 19½¢; Nos. 8 to 12, 19½¢, in 12 doz. to 100 doz. lots.
Eddystone Braided, Nos. 8 to 12, 26¢; 7, 26½; 6, 27½¢.
Harmony Cable Laid Italian, Nos. 7 to10.....℔ lb 23¢
Pullman:
Wire Sash Cord.....10%
Sash Cord Attachments, per 100..$2.00
Samson, Nos. 8 to 12:
Braided, ℔ lb., Drab Cotton, 55¢; Italian Hemp, 40¢@50¢; Linen, 65¢; White Cotton, 50¢; Spot Cord.....50¢
Massachusetts, White...℔ lb 40¢
Massachusetts, Drab...℔ lb 45¢
Phoenix, White, Nos 8 to 12....27¢
} 15%
Silver Lake, per lb.:
A, Drab, 45¢; A, White, 40¢; B, Drab, 40¢; B, White, 35¢; Italian Hemp, 40¢; Linen....57½¢
See also Chain and Ribbon.

Wire, Picture—

Full Length.....90@—%
Short Length.....90&20@—%
Hendryx Standard Wire Picture Cord, old list, 85&10%
Turner & Stanton Co. Wire Picture Cord 90%

Cradles—

Grain 50%

Crayons—

White Round Crayons, Cases, 100 gro., $8.00, $8.50, $9.00 and $10.00 according to grade.
Zelnicker's Lumber: ℔ gro.
White and Purple, Indelible....$7.50
Blue, Red, Green, Yellow and Terra Cotta, $6.50; Black.....$4.50
Giant Lumber, 5½ in. x 15-16 in, round, all colors, $12.00; Indelibles, $14.00; Blacks.....$10.00
Genuine Soapstone, Metal Workers', 5 in. x ¼ in. Round, $2.50; 5 in. x ¼ in. Square, $1.75; 5 x ½ x 3-16, $2.50; 5 x 1¼ x 3-16.....$3.00
Suremark, Black, $2.25; Blue, Red and Yellow.....$2.50

Crooks, Shepperds'—

Fort Madison, per doz., Heavy, $5.50; Light $5.00

Crow Bars—See *Bars, Crow.*

Cultivators—

Victor Garden.....50%

Cutlery, Table—

International Silver Company:
No. 12 M'd'm Knives, 1847. ℔ doz. $3.50
Star, Eagle, Rogers & Hamilton and Anchor.....℔ doz. $3.00
Wm. Rogers & Son.....℔ doz. $2.50

Cutters— Glass—

H. H. Mayhew Co.....40%
Red Devil.....60%
R. Mfg. Co.....40%
Woodward 50%

Meat and Food—

American 30%

Nos.	401	402	403	404	405	406	407
Each	$5	$7	$10	$12	$25	$50	$60

Enterprise:

Nos.	5	10	12	22	32
Each	$2	$3	$2.75	$4.50	$6

25@25&7½%
No. 202, $1.50.....40&7½%
P., S. & W. Co.:
Ideal .....40@40&5%
Hales .....60&5%
Little Giant.....℔ doz. 40@50%

Nos.	305	310	312	320	322
	$35.00	$48.00	$44.00	$72.00	$68.00

New Triumph No. 605, ℔ doz. $24.00. 40%
Russwin Food. No. 1, $24.00; No. 2. $27.00; 3, $42.00.....45&10&10%
$15.00 $18.00
Enterprise Beef Shavers.....25@30%

Slaw and Kraut—

Henry Disston & Sons:
Slaw and Kraut Cutters.....35%
Corn Graters.....30%
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife....℔ doz. $3.00
Combined Slaw Cutter and Corn Grater .....℔ doz. $4.00

Tobacco—

All Iron, Cheap...doz, $4.25@4.50
Enterprise .....25&30%
National, ℔ doz., No. 1, $21; No. 2, $18 .....40%

Diggers, Post Hole, &c—

Disston's:
Rapid, ℔ doz., $24.00.....25%
Samson, ℔ doz., $34.00.....25%
Iwan's Pat. Post Hole and Well Auger 40%
Vaughan Pattern Post Hole Augers, ℔ doz., $7.00
Perfection Post Hole Diggers, ℔ doz. $8.50
Split Handle Post Hole Diggers, ℔ doz., $7.50
Hercules Pattern, ℔ doz.....$9.50
Kohler's, ℔ doz., Universal, $14.00; Little Giant, $12.00; Hercules, $10.00; Invincible, $9.00; Rival, $8.50; Pioneer.....$7.50
Never-Break Crucible Steel Post Hole Diggers 60%

Dividers—See *Compasses.*

Drawing Knives—

See *Knives, Drawing.*

Dressers Emery Wheel—

Sterling Emery Wheel Dressers.....35%
Sterling Wheel Dresser Cutters.....35%

Drills and Drill Stocks—

Blacksmith's Common Drilling Machines .....$1.50@1.75
Breast, Millers Falls.....15&10%
Breast, P., S. & W.....33⅓%
C. & C. Ratchet.....25%
Reversible Ratchet Die Stocks....25%
Goodell Automatic Drills.50&10@60&10%
Millers Falls Automatic Drills, Graves', per doz., Nos. 1, $4.86; 2, $8.16.
Millers Falls Automatic Drills.33⅓&10%
Ratchet, Curtis & Curtis.....25%
Ratchet, Parker's.....40%
Ratchet, Weston's.....40%
Ratchet, Weston's, Style H Improved .....40@40&5%
Ratchet, No. 012.....40@40&5%
Ratchet, Celebrated.....40@40&5%
Ratchet, Whitney's, P., S. & W., 40&10@50%
Whitney's Adjustable, No. 10, $12 00. 33⅓%

Twist Drills—

Bit Stock.....70@70&5%
Taper and Straight Shank, 60&10@70%

Drivers, Screw—

Screw D'ver Bits, per doz..45@50¢
Balsey's Screw Holder and Driver, ℔ doz., 2½-in., $6; 4-in., $7.50; 6-in., $9 .....50%
Buck Bros.' Screw Driver Bits.....30%
Champion 50%
Disston's 70%
Fray's Hol. H'dle Sets, No. 3, $12..50%
Ford's Brace Screw Drivers....40&10%
Gay's Double Action Ratchet.....35%
Goodell's Auto.....65@65&10%
Mayhew's Black Handle.....40%
Mayhew's Monarch.....40%
Millers Falls, ℔ doz., Nos. 11, $9.95; 12, $13.73; 20, $8.17; 21, $8.46; 41, $13.43; 42, $17.21.
Smith & Hemenway Co., Neverturn, 66⅔%; Elmora, 60%; Star, 30&10%
Swan's:
Nos. 7565 to 7568, 60%; No. 7540, 40&10%

Eave Trough, Galvanized—

Territory...	Gal. Steel.	Charcoal. Iron.
Northeastern.	*75&10&5%*	*60&20%*
Eastern	*80&2½%*	*60&20%*
Pittsburgh	*80&20%*	*65&10%*
Central	*80&10&10&2½%*	*65&10%*
Northwestern.	*80&10&10%*	*65&10%*
Western	*80&10%*	*60&10&5%*
Tennessee	*80&5%*	*60&10&5%*
Southern	*80%*	*60&10&5%*
Southwestern.	*75&10&2½%*	*60&5%*

Terms.—2% for cash. Factory shipmeets generally delivered.
Note.—Lower prices are made in some sections.
See also Conductor Pipe and Elbows.

Elbows and Shoes—

Factory shipments, all territories:

	Galv. Steel	Galv. C. I.
Standard Gauge	*85@85&10%*	
No. 26	*50%*	
No. 24	*25%*	
No. 22	*10%*	

Elbows, Stove Pipe—

Edwards, Standard Blue....40&10&10%
Edwards, Royal Blue.....40&10&10%
Reeves, Dover, Flat Crimp..40&10&5%

Emery, Turkish—

	½ to 46:	5½ to 220:	Flour.
Kegs	*5¢*	*5½¢*	*3½¢*
½ Kegs	*5¼¢*	*5¾¢*	*3¾¢*
¼ Kegs	*5½¢*	*6¢*	*4¢*
10-lb. cans, 10 in case	*6½¢*	*7¢*	*6¢*
10-lb. cans, less than 10	*10¢*	*10¢*	*8¢*
Less quantity	*10¢*	*10¢*	*8¢*

NOTE.—In lots 1 to 3 tons a discount of 10% is given.

Extensions, Bit—

Ford's Auger Bit Extensions....40&5%

Extractors, Lemon Juice— —See *Squeezers, Lemon.*

Fasteners, Blind—
Zimmerman's Jap'd and Galv., 50 & 5%; Bronze and Plated.....50%
Walling's 50%
Upson's Patent.....40%

Cord and Weight—
Ives, ₱ gro., $1.08.....10%
Titan, ₱ gro., $0.66.....10%

Corrugated—
Acme Corrugated Fasteners.....70%

Faucets—
Cork Lined.....50&10@60%
Metallic Key, Leather Lined, .. 60&10@70%
Red Cedar.....40&5@40&10&5%
Petroleum .....70&10@75%
B. & L. B. Co.:
Metal Key.....60&10%
Star 60%
West Lock.....50&10%
John Sommer's Peerless Tin Key....40%
John Sommer's Boss Tin Key.....50%
John Sommer's Victor Mtl. Key.50&10%
John Sommer's Duplex Metal Key..60%
John Sommer's Diamond Lock.....40%
John Sommer's I.X.L. Cork Lined..50%
John Sommer's Reliable Cork Lined.. 50&10%
John Sommer's Chicago Cork Lined.60%
John Sommer's O. K. Cork Lined...50%
John Sommer's No Brand, Cedar....50%
John Sommer's Perfection, Cedar....40%
Self Measuring:
Enterprise, Self Measuring and Pump, ₱ doz., $36.00.....40&10%
Lane's, ₱ doz., $36.00.....40&10%
National Measuring, ₱ doz, $36.40&10%

Felloe Plates—
See *Plates, Felloe.*

Files— Domestic—
List Nov. 1, 1899.
Best Brands.....70&10@75&10%
Standard Brands.....75&10@80%
Lower Grade....75&10&10@80&10%
Gold Medal.....70%

Imported—
Stubs' Tapers, Stubs' list, July 24, '97.....33⅓@40%

Fixtures, Fire Door—
Richards Mfg. Co.:
Universal, No. 103; Special, No. 104 .....$3.75
Fusible Links, No. 96.....50%
Expansion Bolts, No. 107.....60&10%

Grindstone—
Net Prices:

Inch	*15*	*17*	*19*	*21*
Per doz.	*$3.60*	*3.85*	*4.15*	*4.65*

P., S., W. Co.:

In.	15	17	19	21	24
	$4.00	4.40	4.75	5.50	6.50

....30%
Reading Hardware Co.....60%

Fodder Squeezers—
See *Compressors.*

Forks—
NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.
Iowa Dig-Ezy Potato.....60&10%
Victor, Hay.....60&15&2½%
Victor, Manure.....66⅔%
Victor, Header.....65%
Champion, Hay.....66⅔%
Champion, Header.....65%
Champion, Manure.....60&15&2½%
Columbia, Hay.....60&20%
Columbia, Manure.....70%
Columbia, Spading.....70&12½%
Hawkeye Wood Barley.....40%
W. & C. Potato Digger.....60&10%
Acme Hay.....60&20%
Acme Manure, 4 tine.....60&10&5%
Dakota Header.....60&20%
Jackson Steel Barley.....60&20%
Kansas Header.....65%
W. & C. Favorite Wood Barley....40%
Plated.—See Spoons.

Frames— Wood Saw—
White, S'g't Bar, per doz. 75@80¢
Red, S'g't Bar, per doz. $1.00@1.25
Red, Dbl. Brace, per doz. $1.40@1.50

Freezers, Ice Cream—

Qt.	*1*	*2*	*3*	*4*	*6*
Each	*$1.25*	*$1.60*	*$1.90*	*$2.20*	*$2.80*

Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

Fry Pans—See *Pans, Fry.*

Fuse— *Per 1000 Feet.*
Hemp $2.75
Cotton 3.20
Waterproof Sgl. Taped.. 3.65
Waterproof Dbl. Taped.. 4.40
Waterproof Tpl. Taped.. 5.15
} 2½%

Gates, Molasses and Oil—
Stebbins' Pattern.....80@80&5%

Gauges—
Marking, Mortise, &c..50@50&10%
Chapin-Stephens Co.:
Marking, Mortise, &c.....50&50&10%
Disston's Marking, Mortise, &c..67½%
Wire, Brown & Sharpe's.....33⅓%
Wire, Morse's.....25%
Wire, P. S. & W. Co.....33⅓%

Gimlets— Single Cut—
Numbered assortments, per gro.
Nail, Metal, No. 1, $2.00; 2, $2.30
Spike, Metal, No. 1, $1.00; 2, $1.30
Nail, Wood Handled, No. 1, $2.30; 2, $2.60
Spike, Wood Handled, No. 1, $1.30; 2, $1.60

Glass, American Window
See *Trade Report.*

Glasses, Level—
Chapin-Stephens Co.....65@65&10%

Glue, Liquid Fish—
Bottles or Cans, with Brush, 25&10@50%
Elwell's 40%

Grease, Axle—
Common Grade...gro. $6.00@$6.50
Dixon's Everlasting, 10-lb. pails, ea. 85¢; in boxes, ₱ doz., 1 lb, $1.20; 2 lb.....$2.00
Helmet Hard Oil.....25%

Griddles, Soapstone—
Pike Mfg. Co.....33⅓&33⅓&10%

Grinders—
Pike Mfg. Co.:
Hand and Foot Power, Pyko Nos. 1, 2, 3; Pyko Primo; Pyko Peerless; Pyko Spiral (foot power).33⅓%
Mower Knife and Tool, $5.00..40&10%
Royal Mfg. Co.:
Alundum Grinding Machines, each, Nos. 01, $1.75; 1A, $2.50; 10, $5.00 .....30%
Alundum Sickle Grinders, each, Nos. 20, $5.00; 20A, $6.00; 20A Combined, $6.50.....30%
Alundum Disc Grinders, each, $2.50 .....30%

Grindstones—
Pike Mfg. Co.:
Improved Family Grindstones, ₱ inch, ₱ doz., $2.00.....33⅓%
Richards Mfg. Co., Eli and Cycle, Ball Bearing, mounted.....40%

Grips, Nipple—
Perfect Nipple Grips.....40&10&2%

Halters and Ties—
Cow Ties.....65@65&10%
Bridgeport Chain Co.:
Triumph Coil and Halters.35&2½@40%
Brown Coil and Halters...45@50&5%
Brown Cow Ties.....50&5@50&10&5%
Brown Tie Outs.....70&10@75&5%
Covert Mfg. Co.:
Web .....30&2%
Jute Rope.....35%
Sisal Rope.....20%
Cotton Rope.....45%
Hemp Rope.....45%
Oneida Community:
Am. Coil and Halters.....40@40&5%
Am. Cow Ties.....45@50%
Niagara Coil and Halters...45@50&5%
Niagara Cow Ties....45&5@50&10&5%

Hammers—
Handled Hammers—
Heller's Machinists'....55&10@55&10&5%
Heller's Farriers.....40&5@40&10&5%
Peck, Stow & Wilcox Co.:
Crucible Steel.....40&10@50%
Farriers' .....40&10@50%
Riveting .....40&10@50%
Machinists' .....66⅔@5%
Blacksmiths' 50%
Fayatte R. Plumb:
A. E. Nail.....40&2½@40&12½%
Eng. and B. S. Hand.50&10&5@60&5%
Machinists' Hammers.....60&10&5%
Rivet and Tinners'.40&7½@40&12½&5%
Victor Magnetic Tack, ₱ gro....$7.75

Heavy Hammers and Sledges—
Under 3 lb., per lb., 50¢...80&10%
3 to 5 lb., per lb., 40¢...80&10&10%
Over 5 lb., per lb., 30¢.....
Over 5 lb., per lb., 30¢.80&10&10%

Handles—
Agricultural Tool Handles
Axe, Pick, &c....60&10@60&10&5%
Hoe, Rake, &c.....40%
Fork, Shovel, Spade, &c.:
Long Handles.....40%
D Handles.....40%

Cross-Cut Saw Handles—
Atkins' 40%
Champion 50%
Disston's 50%

Mechanics' Tool Handles—
Auger, assorted...gro. $3.00@$3.50
Brad Awl.....gro. $1.65@$1.75
Chisel Handles, Ass'd, per gro.:
Tanged Firmer, Apple, $2.40@ $2.65; Hickory.....$2.15@2.40
Socket Firming, Apple, $1.75@ $1.95; Hickory.....1.60@1.75
Socket Framing, Hickory, $1.60@$1.75
File, assorted.....gro. $1.30@$1.40
Hammer, Hatchet, &c.. 60&10@60&10&5%
Hand Saw, Varnished, doz., 80& 85¢; Not Varnished.....65@75¢
Plane Handles:
Jack, doz., 50¢; Fore, doz....45¢
Chapin-Stephens Co.:
Carving Tool.....30@30&10%
Chisel .....60@60&10%
File and Awl.....60@60&10%
Saw and Plane.....30@30&10%
Screw Driver.....30@30&10%
Millers Falls Adj. and Ratchet Auger Handles .....15&10%
Nicholson Simplicity File Handle.... ₱ gro. $0.85@$1.50
J. L. Osgood:
Indestructible File and Tool, ₱ gro., No. 1, $8.00; No. 2, $8.50; No. 3, $9.00; No. 4, $9.50; No. 5, $10.00.....gro. lots 10%
W. A. Zelnicker Supply Co.:
Hammer, ₱ doz., 12 in., $2.00; 14 in., $2.00; 16 in., $2.30; 18 12., $2.50; 20 in., $2.70; 22 in., $3.00; 24 in., $3.30; 26 in., $3.50; 30 in., $3.80.
Sledge, ₱ doz., oval, 30 in., $3.80; octagon, 30 in., $3.80; oval, 36 in., $4.00; octagon, 36 in., $4.00.
Axe, ₱ doz. 28 to 34 in., $5.60; 36 in., $5.80.
Adze, ₱ doz., 36 in., $5.80; 36 in., $7.80.
Pick, ₱ doz. R. R., 36 in., $8.00; coal, 34 in., $5.80.
Hatchet, ₱ doz., 12 to 14 in., $2.00.
} 5%

Hangers—
NOTE.—Barn Door Hangers are generally quoted per pair, without track and Parlor Door Hangers per double set with track, &c.
Chicago Spring Butt Co.:
Friction 25%
Oscillating 25%
Big Twin.....25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door.....50%
Elevator 30%
Railroad 50%
Cronk & Carrier Mfg. Co.:
Loose Axle.....60&10%
Roller Bearing.....70%
Griffin Mfg. Co.:
Solid Axle, No. 10, $12.00..60&10%
Roller Bearing, No. 11, $15.00, 60&10%
Roller Bearing, Ex. Hy., No. 22, $18.00.....60&10%
Bull Dog, $24.00.....70%
Lane Bros. Co.:
Parlor, Ball Bearing, $4.00; Standard, $3.15; No. 105, $2.85; New Model, $2.80; New Champion per set of 4 Hangers, complete with track.....$2.25
Barn Door, Standard.....60&10%
Hinged .....net $6.08
Covered .....60&5%
Special .....70&5%
Trolley Hangers and track...50%
Lawrence Bros.:
Advance .....55&10%
Cleveland .....70&7½%
Clipper, No, 75.....60%
Crown .....55&10%
Cyclone, No, 40.....net $6.50
Tandem, No. 50.....net $7.50
New York.....55&10%
McKinney Mfg. Co.:
Roller Bearing, Nos. 1 and 2..70%
Anti-Friction 60%
Hinged Hangers, King Charm.60%
Richards Mfg. Co.:
Hangers, Nos. 47, 48, 147, 247, 60&5%
Pioneer Wood Track, No. 3..$2.25
Roller B'r'g St'l Track No. 12.$2.20
Roller B'r'g St'l Track No. 13.$2.50
Roller B'r'g, Nos, 39, 41, 43, 70&7½%
Hero, Adj, Track No. 19..50&10%
Adjustable Track Tandem Trolley Track No. 16.....50&10%
Seal, Steel Track No. 8.....$2.25
Auto Adj. Track No. 22..50&5%
Trolley B, D, No. 17, $1.25; F. D. No. 120, $2.25; No. 121, $2.45; No. 150.....$2.50
Safety Underwriters F. D, No. 101 .....50%
Tandem No. 41..2½ and 3 60&10%
Palace, Adjustable Track No. 132 .....50&5%
Royal, Adjustable Track No. 122 .....50&10%
Ives' Wood Track No. 1.....$2.25
Trolley B, D, No. 20.....50&10%
Trolley B. D. No. 24, $1.30; No. 27, $1.40; No. 28.....$1.60
Roller Bearings, Nos. 37, 38, 39, 41, 43, 44, Sizes 1 and 2.70&7½%
Anti-friction, No. 42; No. 44, sizes 2½ and 3.....60%
Hinged Tandem No. 46....60&5%
Folding Door B. B, Swivel No. 135 .....40%
Taylor & Boggis F'y Co.'s Kidder's Roller Bearing, ₱ doz., 4 in., $12.00; 5 in., $14.00..40&10%
Myers' Stayon Hangers.....60%

Hangers— Garment—
Pullman Trouser, ₱ gro., No. 1 $9.00; No. 4, $24.00; No. 5, $16.50; No. 8, Black Enamel, $7.50; No. 10, $21.00; No. 12, $8.00; No. 15, Rods, $9.00; No. 18, Loops.....$10.00
Victor Folding.....₱ gro. $9.60

Gate—
Myers' Patent Gate Hangers, ₱ doz. net 50%

Joist and Timber—
Lane Bros. Co.....35%

Hasps—
Griffin's Security Hasp.....50&10%
McKinney's Perfect Hasp, ₱ doz..60%

Hatchets—
Regular list, first qual.40&12½@—
Second quality.....50&10&5@—

Heaters, Carriage—
Clark, No. 5, $1.25; No. 5B, $1.50; No. 3, $1.75; No. 3D, $2.00; No. 7D, $2.25; No. 3E, $2.50; No. 1 $3.00.....25%
Clark Coal, ₱ doz., $0.75.....20%

Hinges—
Blind and Shutter Hinges
Surface Gravity Locking Blind: (Victor; National; 1868 O. P.; Niagara; Clark's O. P.; Clark's Tip; Buffalo.)

No.	*1*	*3*	*5*
Doz. pair.....	*$0.75*	*1.35*	*2.70*

Mortise Shutter: (L. & P., O. S., Acme, &c.)

No.	*1*	*1½*	*2*	*2½*
Doz. pair....	*$0.70*	*.65*	*.60*	*.55*

Mortise Reversible Shutter (Buffalo, &c.):

No.	*1*	*1½*	*2*
Doz. pair.....	*$0.70*	*.65*	*.60*

North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%
Charles Parker Co.....70@75%
Parker Wire Goods Co.
Hale & Benjamin Automatic Blind Hinges 20%
Hale's Blind Awning Hinges, No. 110, for wood, $9.00; No. 111, for brick, $9.00.....20%
Reading's Gravity.....60%
Stanley's Steel Gravity Blind Hinges. No. 164½, ₱ doz. sets, without screws, $0.95; with screws, $1.25.
Wrightsville Hardware Co.:
O. S., Lull & Porter.....75&5%
Acme, Lull & Porter.....75%
Queen City Reversible.....75%
Shepard's Noiseless, Nos, 60, 65, 55 .....75&5%
Niagara, Gravity Locking, Nos, 1 3 & 5.....75&5%
Clark's O. P., No. 1.....75&10%
Clark's O. P., Nos. 3 and 5....75&5%
Tip Pat'n, No. 1.....75&10%
Clark's No. 3.....75&5%
Buffalo Gravity Locking, Nos, 1, 3 & 5.....70&10&5%
Shepard's Double Locking.....75%
Champion Gravity Locking.....75&5%
Pioneer .....75&10%
Empire 65%
W. H. Co.'s Mortise Gravity Locking, No. 2.....60&10%

Gate Hinges—
Clark's or Shepard's—Doz. sets:

No.	*1*	*2*	*3*
Hinges with L't'chs.	*$2.00*	*2.70*	*5.00*
Hinges only.....	*1.25*	*1.90*	*3.50*
Latches only.....	*.70*	*.75*	*.35*

New England:
With Latch.....doz..@$2.00
Without Latch.....doz..@$1.60
Reversible Self-Closing:
With Latch.....doz..@$1.75
Without Latch...doz. ...@$1.35
Western:
With Latch.....doz. $1.75
Without Latch.....doz..$1.15
Wrightsville Hardware Co.:
Shepard's or Clark's Hinges and Latches, Hinges only or Latches only, Nos. 1, 2 or 3.....70%

Miscellaneous—
Griffin Mfg. Co., Fleur de Lis Surface Hinges, ₱ doz. prs.....$1.00

Pivot Hinges—
Bommer Bros, Pivot, Ball Bearing 40%
Lawson Mfg. Co, Matchless.....30%

Spring Hinges—
Holdback, Cast Iron...$6.75@$7.00
Non-Holdback, C'st Iron $6.50@$6.75
J. Bardsley:
Bardsley's Non-Checking Mortise Floor Hinges.....40%
Bardsley's Patent Checking.33⅓%
Bommer Bros.:
Spring Butt Hinges.....40%
Surface Floor, Ball Bearing 40%
Mortise Floor, Ball Bearing.40%
Lavatory Hinges.....40%
Non-Holdback Screen Door, Nos. 2000 and 900.....40%
Holdback Screen Door, No. 999.....₱ gro, $9.00
Chicago Spring Butt Co.:
Chicago Spring Hinges.....25%
Triple End Spring Hinges....50%
Chicago (Ball Bearing) Floor.50%
Garden City Engine House...25%
Keene's Saloon Door.....25%
Columbian Hardware Co.:
Acme, Wrought Steel.....30%
Acme, Brass.....25%
American 30%
Columbia, ₱ gr., No. 14, $9.00; No. 18.....$25.00
Columbia, Adj., No. 7, ₱ gr.$12.00
Gem, new list.....30%
Clover Leaf and Acorn, per gro, ...$12.00
Oxford, new list.....30%
Floor Spring Hinges.....65&10%
Columbian Steel.....65&10%
Lawson Mfg. Co.:
Matchless Spring Hinges.....30%
Matchless Jamb Hinges.....30%
Richards Mfg. Co.:
Superior Double Acting Floor Hinges 40%
Shelby Spring Hinge Co.:
Buckeye All Steel Holdback Screen Door.....₱ gr. $9.00
Chief Ball Bearings Floor Hinge 50%
Ball Bearing Door.....25%
No. 777, Sheet Steel Holdb'k, ₱ gr, pr.....$9.00
Standard Mfg. Co.:
Champion Double Acting Door Hinge .....25&10&10%
Standard Double Acting Floor Hinge .....25&10&10%
Superior Spring Hinge Co.:
Superior Floor Hinges.....33⅓%
Spring Hinges.....33⅓%

Extra 5@10% often given.

Extra 10% often given on most of these Hinges.

Wrought Iron Hinges—
Strap and T Hinges, &c., list February 10, 1908:
Light Strap Hinges..50&10%
Heavy Strap Hinges..60&5%
Light T Hinges.....50%
Heavy T Hinges.....40%
Extra Hvy. T Hinges.50&10%
Hinge Hasps.....33⅓%
Cor. Heavy Strap....60&5%
Cor. Ex. Heavy T...50&10%

Screw Hook and Strap.

6 to 12 in..	*lb.*	*3½¢*
1½ to 20 in..	*lb.*	*3½¢*
22 to 36 in..	*lb.*	*3 ¢*

Screw Hook and Eye:
½ to 1 inch.....lb. 6½¢
⅝-inch .....lb. 7½¢
½-inch .....lb. 8½¢

Extra 10&7½%.

Hitchers, Stall—
Covert Mfg. Co., Stall Hitchers..30&2%

Hods— Coal—
M'f'gr's list, price per gross:

Inch	*15*	*16*	*17*	*18*
Galv. Open....	*$35*	*$39*	*$42*	*$46*
Jap. Open....	*26*	*28*	*31*	*35*
Galv. Funnel...	*43*	*48*	*52*	*56*
Jap. Funnel....	*33*	*36*	*39*	*43*

Extra 10&7½%.

Masons' Etc.
Cleveland Wire Spring Co.:
Steel Brick, No. 162.....each $1.05
Steel Mortar, No. 158.....each $1.35

Hoes— Rye—
Scovil and Oval Pattern, 60&10@60&10&10%
Grub, list Feb. 23, 1899, 70&10@70&10&10%
D. & H. Scovil.....27½%
Am. Fork & Hoe Co. (Scovil Pattern) 60%

Handled—

NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.

Cronk's Weeding, No. 1, $2.00; No. 2, $2.50
Star Double Bit.....$2.50
Madison Cotton Hoe....70&10&10%
Ft. Madison Crescent Cultivator Hoe, ℔ doz.....70&10%
Ft. Madison Mattock Hoes:
Regular Weight.....℔ doz. 40&5%
Junior Size.....℔ doz. $4.00
Ft. Madison Sprouting Hoe, ℔ doz., 60&10%
Ft. Madison Dixie Tobacco Hoe.....75&10&7½%
Kretsinger's Cut Easy.....70&10%
Warren Hoe.....45&10%
W. & C. Ivanhoe.....75&2%
B. B. 6 in., Cultivator Hoe.....$3.40
B. B. 6½ in.....$3.50
Acme Wedding.....℔ doz., net, $4.35
W. & C. L'tning Shuffle Hoe, ℔doz.$5.25

Hoisting Apparatus—

See *Machines, Hoisting.*

Holders— Bit—

Angular, ℔ doz. $24.00.....45&10%

Door—

Bardsley's, Iron, 40%; Brass and Bronze.....25%
Empire.....50%
Pullman.....25%
Richards Mfg. Co.: No. 117, Ever-ready, 40%; Nos. 118, 119, Sure Grip.....50%
Superior.....33⅓%

File and Tool—

Nicholson File Holders and File Handles.....33⅓@40%

Fruit Jar—

Triumph Fruit Jar Holder, ℔ gross, $18.00; ℔ doz.....$2.00

Trace and Rein—

Fernald Double Trace Holder, ℔ doz. pairs.....$1.25
Dash Rein Holder, ℔ doz.....$1.25

Hones—Razor—

Pike Mfg. Co., Belgian and Swaty, 50%; German.....33⅓%

Hooks—Cast Iron—

Bird Cage, Reading.....40%
Clothes Line, Reading List.....40%
Coat and Hat, Reading.....45&20%
Coat and Hat, Wrightsville.....60&5%
Harness, Reading List.....40%

Wire—

Belt, Nos. 1 to 15....75&10@80%
Wire C. & H. Hooks..80@80&10%
Bradley Metal Clasp Wire, Coat and Hat. 75&10@80%; Ceiling..75&10@80%
Columbian Hdw. Co., Gem.....75&10%
Parker Wire Goods Co., King..70&10%
Wire Goods Co.:
Acme, 60&10%; Chief, 70&10%; Crown, 75%; Czar, 65&10%; V Brace, 75%; Czar Harness, 50%; Ceiling, 75%.

Wrought Iron—

Box, 6 in., per doz., $0.90; 8 in., $1.15.
Cotton.....doz. $1.25@$1.50
Wrought Staples, Hooks, &c.—
See Wrought Goods.

Miscellaneous—

Hooks, Bench, see *Stops, Bench.*
Rush, Light, doz., $6.20; Medium, $6.75; Heavy, $7.65
Grass, best, all sizes, per doz., $2.75@$3.00
Grass, common grades, all sizes, per doz.....$1.25@$1.50
Whiffletree.....lb. 5½@6¢
Hooks and Eyes:
Brass.....60@60&10%
Malleable Iron.....70@70&10%
Covert Mfg. Co. Gate and Scuttle Hooks.....40%
Ft. Madison Cut-Easy Corn Hooks, ℔ doz. $3.25 net
Turner & Stanton Co. Cup and Shoulder.....85&10%
Bench Hooks—See Bench Stops.
Corn Hooks—See Knives, Corn.

Horse Nails—

See *Nails, Horse.*

Horseshoes—

See *Shoes, Horses.*

Hose, Rubber—

Garden Hose, ¾-inch:
Competition.....ft. 6@6¼¢
3-ply Guaranteed.....ft. 8½@9¢
4-ply Guaranteed.....ft. 9½@12¢
Cotton Garden, ¾-in., coupled:
Low Grade.....ft. 8@ 9c
Fair Quality.....ft. 10@11¢

Irons— Sad—

From ¼ to 10.....lb. 2½@2¾¢
B. B. Sad Irons.....lb. 3¼@3½¢
Mrs. Potts', cents per set:

	Nos. 50	55	60	65
Jap'd Tops	83	80	93	91
Tin'd Tops	88	85	98	95

New England Pressing..lb. 3¾@4¢

Bar and Corner—

Richards Mfg. Co., Bar, 60&10%; Corner.....60%

Pinking—

Pinking Irons.....doz. 60@65¢

Irons, Soldering

See *Coppers.*

Jacks, Wagons—

Covert Mfg. Co.:
Auto Screw.....30&2%; Steel, 45%
Lockport.....50%
Lane's Steel.....30&5%
Richards' Tiger Steel, No. 130...50&10%
Smith & Hemenway Co.'s.....25%

Ladder—

Richards Mfg. Co., Ladder Jacks..50%

Jointers—

Cake Mfg. Co., Saw Jointers, $7.00..40%

Kettles—

Brass, Spun, Plain.....20@25%
Enameled and Cast Iron—See Ware, Hollow.

Knives—

Butcher, Kitchen, &c.—

Foster Bros.' Butcher, &c.....30%
Wilkinson Shear & Cutlery Co...60%

Corn—

Columbian Cutlery Co., Wilcut Brand Knives and Hooks.....60%
Withington Acme, ℔ doz., $2.65; Dent, $2.75; Adj. Serrated, $2.20; Serrated, $2.10; Yankee No. 1, $1.50; Yankee No. 2, $1.15.

Drawing—

Standard List.....80&10@—%
C. E. Jennings & Co., Nos. 45, 46, 25&7½%
Jennings & Griffin, Nos. 41, 42, 66⅔&7½%
Swan's.....66⅔@70%
Watrous.....16⅔%
L. & I. J. White.....20&5@25%

Hay and Straw—

Serrated Edge, per doz. $5.00@5.50
Iwan's Sickle Edge.....℔ doz. $9.50
Iwan's Serrated.....℔ doz. $10.00

Miscellaneous—

Farriers' .....doz. $2.60@3.35
Wostenholm's .....℔ doz. $3.00@3.25

Knobs—

Base, 2½-inch, Birch or Maple.
Rubber Tip.....gro. $1.25@1.40
Carriage, Jap., Drive, all sizes, gro. 35@40¢
Door, Mineral.....doz. 65@70¢
Door, Por. Jap'd.....doz. 70@75¢
Door, Por. Nickel..doz. $2.05@2.15
Barnsley's Wood Door, Shutters, &c. 15%

Lacing, Leather—

See *Belting, Leather*

Ladders, Store, &c.—

Lane's Store.....25%
Myers' Noiseless Store Ladders....50%
Richards Mfg. Co.:
Improved Noiseless, No. 112.....50%
Climax Shelf, No. 115.....50%
Trolley, No. 109.....50%

Ladles, Melting—

L. & G. Mfg. Co., Melting and Plumbers'.....25%
P., S. & W.....40&10%
Reading.....60%

Lanterns—Tubular—

Regular, No. 0.....doz. $4.35@4.50
Side Lift, No. 0....doz. $4.60@4.75
Hinge Globe, No. 0.doz. $4.60@4.75
Other Styles.....40@40&10%

Bull's Eye Police—

3-inch .....$3.75@4.00

Latches— Thumb—

Roggin's Latches, Jap'd, with Screws .....doz. 35@40¢

Door—

Cronk & Carrier Mfg. Co., No. 101, ℔ doz. $2.00
Richards' Bull Dog, Heavy, No. 125.....50&5%
Richards' Trump, No. 127.....$1.30

Leaders, Cattle—

Small.....doz. 50¢; large, 60¢
Covert Mfg. Co.:
Cotton, 45%; Hemp, 45%; Jute, 35%; Sisal, 20%.

Leathers, Pump—

See *Pumps—*

Lifters, Transom—

R. & E.....10%

Lines—

Wire Clothes, Nos.	*18*	*19*	*20*
100 feet	*$2.30*	*1.95*	*1.75*
75 feet	*$1.95*	*1.65*	*1.50*

Samson Cordage Works:
Solid Braided Chalk, Nos. 0 to 3..40%
Solid Braided Masons'.....30%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50.....℔ gr. 20%
Masons' Lines, Shade Cord, &c.; White Cotton, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50; Colors, No. 3½, $1.75; No. 4, $2.25; No. 4½, $2.75; Linen, No. 3½, $2.50; No. 4, $3.50; No. 4½, $4.50.....20%
Tent and Awning Lines: No. 5, White Cotton, $7.50; Drab Cotton, $8.50.....20%
Clothes Lines, White Cotton: 50 ft., $2.75; 60 ft., $3.25; 70 ft., $3.75; 75 ft., $4.00; 80 ft., $4.25; 90 ft., $4.75; 100 ft., $5.25.....20%
Turner & Stanton Co.:
Solid Braided Chalk, Masons' and Awning Lines.....40%
Clothes Lines, White Cotton....20%
Shade Cord, Cotton or Linen....20%

Locks— Cabinet—

Cabinet Locks....33⅓@33⅓@5%

Door Locks, Latches, &c.—

NOTE.—Net Prices are very often made on these goods.
Reading Hardware Co.....40%
R. & E. Mfg. Co.....10%

Padlocks—

R. & E. Mfg. Co. Wrought Steel and Brass.....75&10%

Sash, &c.—

Ives' Patent:
Crescent.....10%
Automatic Gravity Metal Sash, ℔ gro. $149.58.....10%
Window Ventilating.....10%
Pullman Patent Ventilating Lock..25%
Reading Sash Locks.....40%
Taylor Mfg. Co., Perfect Ventilating, ℔ doz.....$0.75@$1.00

Machines—Boring—

Com. Upr't, without Augers, $2.00@2.25
Com. Angl'r, without Augers, $2.25@2.50
Ford Auger Bit Co.....$22.00
Jennings', Nos. 1 and 4.....25&7½%
Millers' Falls.....5.75
Snell's, Upright, $2.65; Angular, $2.90
Swan's Improved.....40&10%

Corking—

Reisinger Invincible Hand Power... ℔ doz. $48.00

Fence—

Williams' Fence Machines....each, $5.50

Hoisting—

Moore's Anti-Friction Chain Hoist.30%
Moore's Hand Hoist, with Lock Brake.....20%
Moore's Cyclone High Speed Chain Hoist.....25%

Ice Cutting—

Chandler's.....12½%

Washing

Boss Washing Machine Co.: Per doz.
Boss No. 1.....$57.00
Boss Rotary.....$57.00
Champion Rotary Banner No. 1..$57.00
Standard Champion No. 1...$50.00
Standard Perfection.....$27.00
Cincinnati Square Western.....$33.00
Uneeda American, Round.....$33.60

Mallets—

Hickory .....45¢@50%
Lignumvitæ .....45¢@50%
Tinners' Hickory and Apple-wood .....doz. 45¢@50%

Mangers, Stable—

Swett Iron Works.....50%

Mats, Door—

Acme Flexible Steel.....50%
Elastic Steel (W. G. Co.), new list.50%

Mattocks—

See *Picks and Mattocks.*

Milk Cans—See *Cans, Milk.*

Mills, Coffee, &c.—

Enterprise Mfg. Co.:
Coffee.....20@25%
Shell and Corn.....25&10%
National list Jan. 1, 1902.....30%
Parker's Columbia and Victoria..33⅓%
Parker's Box and Side.....50&10%
Swift, Lane Bros. Co.....30%

Motors, Water—

Divine's Red Devil.....30%

$2.50	3.50	10.00	15.00	33⅓%
No. 1.	2	3	4	

Lippincott's:

No.	1	2	3	4	
	$2.50	3.50	10.00	15.00	33⅓%

Pike Mfg. Co., Tool and Knife Grinding.....33⅓%

Mowers, Lawn—

NOTE.—Net prices are generally quoted
Cheapest, 10-in., $2.00; advance 10¢ for each size.
Cheap, 10-in., $2.25; advance 15@20¢ for each size.
Better Grade, 10-in., $3.00; advance 25¢ for each size.

	12	*14*	*16*	*18 in.*
High Grade	*$4.50*	*4.75*	*5.00*	*5.25*

Continental.....60%
Great American.....70%
Great American Ball B'r'g, new list.70%
Quaker City.....70%
Pennsylvania.....60%
Pennsylvania, Jr., Ball Bearing, 50&10&5%
Pennsylvania Golf.....50%
Pennsylvania Horse.....33⅓&5%
Pennsylvania Pony.....40&5%
Granite State:
Style A, Low Wheel.....70%
Style B, Low Wheel.....70%
Style C, High Wheel, spcl. list, 70&10%
Style D, High Wheel, spcl. list..70%
Philadelphia:
Styles M., S., C., K., T....70&10&5%
Style A, all Steel.....60&10&5%
Style E, High Wheel.....70&10&5%
Drexel and Gold Coin, special list.40%
Horse.....40&5%
Pony.....40&5%
36-in. Horse.....30&10%
Eagle Horse.....30&5%
I. X. L. Horse.....50%

Nails—

Wire Nails and Brads, Miscellaneous .....85&5@85&10%
Cut and Wire. See *Trade Report.*
Hungarian, Finishing, Upholsterers', &c. See *Tacks.*

Horse—

Nos.	6	7	8	9	10	
Anchor	23	21	20	19	18	.. ℔ lb. net, 12¢
Coleman	13	12	12	11	11	net ℔ lb
New Haven..	23	21	20	19	18	.. ℔ lb. net, 12¢

Livingston .. 19 18 17 16 16 .....10%
Western.....℔ lb 8½¢
Jobbers' Special Brands. per lb. 9¢

Picture—

	1½	*2*	*2½*	*3 in.*
Brass Hd, gro.	*.45*	*.55*	*.60*	*.70*
Por. Head, gro.	*..*	*1.10*	*1.10*	*1.10*

Upholsters—

Brass.....30%
Plated.....30&10%

Nippers—

See *Pliers and Nippers.*

Nipples—

Standard Nipple Co.:
Wrought Pipe Nipples.....80%

Nuts— *Blank or Tapped.*

Cold Punched: Off list.
Square .....5.50@5.50¢
Hexagon .....6.00@6.10¢
Square, C., T. & R..5.80@5.90¢
Hexagon, C., T. & R.6.60@6.70¢
Hot Pressed:
Square .....5.80¢
Hexagon .....6.30¢

Oakum—

Best .....lb. 6½¢
U. S. Navy.....lb. 6 ¢
Navy .....lb. 5 ¢
Plumbers' Spun Oakum..2¾@3 ¢

Oil—

Pike Mfg. Co., Stonoil.....40%

Oil Tanks—See *Tanks, Oil.*

Oilers—

Steel, Copper Plated.....75%
Chase or Paragon:
Brass and Copper.....50&10%
Zinc .....65&10%
Railroad .....60&10&10%
Malleable, Hammers' Improved, Nos. 11, 12 and 13, 20%; Old Pattern, Nos. 1, 2, 3, 50%.
American Tube & Stamping Co.:
Spring Bottom Cans.....70@70&10%
Railroad Oilers, &c.....60@60&10%
Maple City Mfg. Co.:
Spring Bottom Cans.....70@70&10%
Railroad Oilers, &c.....60@60&10%

Openers—Packing Box—

Herculever, ℔ doz., $24.....30%

Can Openers—

Per doz.
Sprague, Iron Handle....30@35¢
Sprague, Wood Handle.....40¢
Sardine Scissors.....$1.75@3.00
Can and Bottle Openers, ℔ doz., net: Yankee, $0.75@$0.85; Little Gem, $0.50@$0.65; Nifty.....$0.75

Egg—

Hartigan Nickel Plate, ℔ doz., $2.00; Silver Plate, $4.00.

Packing—

Asbestos Packing, Wick and Rope, any quantity.....18@20¢

Rubber—

(Fair quality goods.)
Sheet, C. I.....11@12¢
Sheet, C. O. S.....11@12¢
Sheet, C. B. S.....12@13¢
Sheet, Pure Gum.....40@45¢
Sheet, Red.....40@50¢
Jenkins' '96, ℔ lb, 80¢.....25%

Miscellaneous—

American Packing....lb. 7@10 ¢
Cotton Packing.....lb. 16@25 ¢
Italian Packing.....lb. 9@10¢
Jute .....lb. 4@4¼¢
Russia Packing.... ....lb. 9@10¢

Pails, Water, Well, &c.—

See *Buckets.*

Paint—

Dixon's Silica-Graphite, in 1 gal. pails and 5 gal. kegs, 25%; packages of larger size.....20%

Pans— Dripping—

Standard List..70¢&10@70¢&10¢5%
Edwards, Royal Blue.....75%

Fry—

Common Lipped:

Nos.	*1*	*2*	*3*	*4*	*5*
Per doz....	*$0.75*	*0.85*	*0.95*	*1.15*	*1.30*

Refrigerator, Galva.—

Inch	*12*	*14*	*16*	*18*
Per doz....	*$1.75*	*2.25*	*2.80*	*3.15*

Paper—Building Paper

Asbestos: lb.
Roll Board or Building Felt, 6 to 30 lb., per 100 sq. ft..2½¢
Roll Board or Building Felt, 3-32 and ⅛ in., 45 to 60 lb., per 100 sq. ft.....3½¢
Mill Board, Sheet, 40 x 40 in., 1-32 to ½ in.....3¢
Per roll.
Rosin Sized Sheathing: 500 sq. ft. Light weight, 25 lbs. to roll, $3@$3.50
Medium weight, 30 lbs. to roll, 56@70¢
Heavy weight, 40 lbs. to roll, 75@78¢
Black Water Proof Sheathing, 500 sq. ft., 1 ply, 65¢; 2 ply, 85¢; 3 ply, $1.10; 4 ply, $1.25.
Deafening Felt, 9, 6 and 4½ sq. ft. to lb., ton.....$54.50
Red Rope Roofing, 250 sq. ft. per roll.....$1.75

Tarred Paper—

1 ply (roll 400 sq. ft.), ton, $34.00@$38.00
2 ply, roll 108 sq. ft.....65¢
3 ply, roll 108 sq. ft.....88¢
Slater's Felt (roll 500 sq. ft.).80¢

Sand Paper and Cloth—

Flint and Emery.....50&10%
Garnet Paper and Cloth.....25%

Parers—Apple—

Goodell Co.:
Family Bay State.....℔ doz. $15.00
Improved Bay State.....℔ doz. $36.00
New Lightning.....℔ doz. $7.00
Turn Table '98.....℔ doz. $6.00
White Mountain.....℔ doz. $5.00
Bonanza Improved.....each $7.50
Dandy .....each $10.00
Eureka Improved.....each $20.00
New Century.....each $20.00
Ranger .....each $30.00
Livingston Nail Co.:
Daisy .....℔ doz. $4.00
Little Star.....℔ doz. $5.00
Rocking Table.....℔ doz. $6.20
Reading Hardware Co.:
Advance .....℔ doz. $4.00
Baldwin .....℔ doz. $4.00
Reading 72.....℔ doz. $3.25
Reading 78.....℔ doz. $6.25

Orange—

Goodell Co., Success.....each $20.00

Potato—

Saratoga .....℔ doz. $7.00
White Mountain.....℔ doz. $6.00

Picks and Mattocks—
(*List Jan., 1908.*)

List .....70&10@70&10&10%
Cronk's Handled Garden Mattock, ₱ doz., $3.00.....33⅓%

Pinking Irons—
See *Irons, Pinking.*

Pins, Escutcheon—
Brass .....50@50&10%
Iron, list Nov. 11, '85..60@60&10%

Pipe, Cast Iron Soil—
Standard, 2-6 in.....70@—%
Extra Heavy, 2-6 in..75&10@—%
Fittings, Standard and Heavy, 80&10@80&10&10%

Pipe, Merchant—

	Consumers, Carloads, Steel. Blk.	Galv.	Iron. Blk.	Galv.
	%	%	%	%
⅛ and ¼ in.	66	50	64	..
⅜ in.	68	54	66	52
½ in.	70	58	68	56
¾ to 6 in.	74	64	72	62
7 to 12 in.	71	56	69	54

Pipe, Vitrified Sewer—
Carload lots.

Standard Pipe and Fittings, 3 to 24 in., f.o.b. factory:
First-class 87%
Second-class 90%

Pipe, Stove—

	Per 100 joints. C. L.	L, C. L.
Edwards' Nested:		
5 in., Standard Blue	$6.25	$7.25
6 in., Standard Blue	6.75	7.75
7 in., Standard Blue	7.75	8.75
5 in., Royal Blue	7.00	8.00
6 in., Royal Blue	7.50	8.50
7 in., Royal Blue	8.50	9.50
Wheeling Corrugating Co.'s Nested:		
5 in., Uniform Color	$5.90	$6.90
6 in., Uniform Color	6.40	7.40
7 in., Uniform Color	7.40	8.40

Planes and Plane Irons—
Wood Planes—
Bench, first qual.....30@30&10%
Bench, second qual...40@40&10%
Molding .....25@25&10%

Chapin-Stephens Co.:
Bench, First Quality.....30%
Bench, Second Quality.....40%
Molding and Miscellaneous.....25%
Toy and German.....30%
Union 60%

Iron Planes
Chaplin's Iron Planes.....60%
Union 60%

Plane Irons—
Wood Bench Plane Irons, list Dec. 12, '06 .....25%
Buck Bros.....30%
Chapin-Stephens Co.....25%
Union 50%
L. & I. J. White.....20&5@25%

Planters, Corn, Hand—
Kohler's Eclipse.....₱ doz. $7.50

Plates—
Felloe .....lb. 3¾@4¢
Avery' Stamping Co.:
Standard Wrot, Steel Felloe Plates in 100 lb kegs, per 100 lb, ¾-in. to 1¼-in., $4.00 net; 1¼-in. to 2-in., inclusive, $3.75 net.

Steel Pipe Hook—
Never-Break .....75&10%

Pliers and Nippers
Button Pliers....75&5@75&10&5%
Gas Burners, per doz., 5 in., $1.25 @$1.30; 6 in., $1.45 $1.50.
Gas Pipe..7 8 10 12-in.
$2.00 $2.25 $2.75 $3.50
Acme Nippers.....50&5%
Cronk & Carrier Mfg. Co.:
American Button.....80%
Improved Button.....75&10%
Cronk's 60%
No. 89 Linemen's.....50%
Stub's Pattern.....45%
Combination and others.....33⅓%
Heller's Farriers' Nippers, Pincers and Tools.....40&5@40&10&5%
P., S. & W. Tinners' Cutting Nippers 40%
Swedish Side, End and Diagonal Cutting Pliers.....50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds....40%

Plumbs and Levels—
Chapin-Stephens Co.:
Plumbs and Levels.....30@30&10%
Chapin's Imp. Brass Cor..40@40&10%
Pocket Levels.....30@30&10%
Extension Sights.....30@30&10%
Machinists' Levels.....40@40&10%
Disston's Plumbs and Levels....60&10%
Disston's Pocket Levels.....60&10%
Stanley's Dulex.....35%
Woods' Extension.....33⅓%

Points, Glaziers'—
Bulk and 1-lb. papers.....lb. 9¢
½-lb. papers.....lb. 9½¢
¼-lb. papers.....lb. 10¢

Police Goods—
Manufacturers' Lists..35@35&5%
Tower's 25%

Polish—Metal, Etc—
Ladd Co.:
Putnade Liquid, ₱ gro., ⅛ pts., $20.00; 1 pts., $20.00; 1 qts., $40.00; ½ doz. ½ gals. $6.75; 1 gals. $10.00.
Putnoline Liquid, No. 1 (¼ pt.), $3.00; No. 2 (1 qt.), $9.00..40%
Putnoline Paste.....40%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ₱ doz. 50¢; ₱ gro. $4.50; ½ lb boxes, ₱ doz. $1.25; 1 lb boxes, ₱ doz. $2.25.
U. S. Liquid, 8 oz. cans, ₱ doz., $1.25.
Barkeepers' Friend Metal Polish, ₱ doz., $1.75.

Stove—
Black Eagle Benzine Paste, 5 lb cans, ₱ lb 10¢
Black Eagle, Liquid, ½ pt. cans.. ₱ doz. 75¢
Black Jack Paste, ¾ lb cans, ₱ gr. $9.00
Black Kid Paste, 5 lb can...each, $0.65
Ladd's Black Beauty Liquid, per 100 tins.....$6.75
Joseph Dixon, ₱ gr. $5.75.....10%
Dixon's Plumbago.....₱ lb 8¢
Fireside .....₱ gr. $2.50
Gem, ₱ gr. $4.50.....10%
Japanese .....₱ gr. $3.50
Jet Black.....₱ gr. $3.50
Peerless Iron Enamel, 10 oz. cans.. ₱ doz. $1.50

Window Polish—
Benj. P. Forbes:
Glasbright, No. 2, gal pails, ₱ doz., $24.00; each, $2.50; 1 lb cans, each .....75¢
Glasbright Powder, bbls., ₱ lb..20¢

Poppers, Corn—
1 qt. Square..doz.$0.80; gro.$8.75
1 qt. Round..doz.$0.90; gro.$10.00
1½ qt. Square..doz.$1.20; gro..$12.00
2 qt. Square..doz.$1.50; gro..$15.00

Post Hole and Tree Augers and Diggers—
See also *Diggers, Post Hole, &c.*

Posts, Steel—
Steel Fence Posts, each, 5 ft., 42¢; 6 ft., 46¢; 6½ ft., 48¢.
Steel Hitching Posts.....each $1.30

Potato Parers—
See *Parers, Potato.*

Pots, Glue—
Enameled 40%
Tinned .....30&10%

Powder—
In Canisters:
Duck, 1 lb.....each 45¢
Fine Sporting, 1 lb....each 75¢
Rifle, ½ lb.....each 15¢
Rifle, 1 lb.....each 25¢
In Kegs:
25-lb. kegs.....$3.50
25-lb. keys.....$4.50
King's Semi-Smokeless:
Keg (25 lb bulk).....$6.50
Half Keg (12½ lb bulk).....$3.50
Quarter Keg (6¼ lb bulk).....$1.90
Case 24 (1 lb cans bulk).....$8.50
Half case (1 lb cans bulk).....$4.50

King's Smokeless:	Shot Gun.	Rifle.
Keg (25 lb bulk)	$12.00	$15.00
Half Keg (12½ lb bulk)	6.25	7.75
Quarter Keg (6¼ lb bulk)	3.25	4.00
Case 24 (1 lb cans bulk)	14.00	17.00
Half case 12 (1 lb c. bk)	7.25	8.75

Presses—
Fruit, Wine and Jelly—
Enterprise Mfg. Co.....20@25%

Seal Presses—
Morrill's No. 1, ₱ doz., $20.00.....50%

Pruning Hooks and Shears
See *Shears.*

Pullers, Nail, Etc.—
Cyclops 50%
Miller's Falls, No. 3, ₱ doz., $12.00.. 33⅓&10%
Morrill's No. 1, Nail Puller, ₱ doz. $20.00 .....50%
Pearson No. 1, Cyclone Spike Puller, each $30.00.....50%
The Scranton Co. Case Lots:
No. 2B (large).....$5.50
No. 3B (small).....$5.00
Smith & Hemenway Co.:
Diamond B.....70%
Giant 50%
Staple Pullers, Utica and Darlson 60%
Taylor Mfg. Co., Sampson Tack, ₱ doz.....$0.40

Pulleys, Single Wheel—

Inch	1½	1¾	2	3
Awning or Tackle, doz.	$0.50	.55	.60	1.05
Hay Fork, Swivel or Solid Eye, doz., 4 in., $1.25; 5 in., $1.55				
Inch	2	2¼	2½	
Hot House, doz	$0.65	.85	1.20	
Inch	1¼	1½	1¾	2
Screw, doz	$0.16	.19	.23	.30
Inch	1¾	2	2¼	2½
Side, doz	$0.25	.40	.55	.60
Inch	1½	1¾	2	2½

Sash Pulleys—
Common Frame; Square or Round End, per doz., 1¾ and 2 in.....17@20¢
Auger Mortise, no Face Plate, per doz., 1¾ and 2 in....20@21¢
Acme, No. 35..1¾ in., 19¢; 2 in., 20½¢
American Pulley Co.:
Wrought Steel American Plain Axle .....50&10%
Wrought Steel, Eagle.....17@20¢
Top Notch, Electrically Welded, Nos. 3 and 4.....19¢
Common Sense.....₱ doz. 20¢
Fox-All-Steel, Nos. 3 and 7, 2 in.... ₱ doz. 50%
Grand Rapids All Steel Noiseless..50%
Niagara, No. 25, 1¾ in., 19¢; 2 in. .....20½¢
No. 26 Troy..1¾ in., 16½¢; 2 in., 16½¢
Star, No. 26...1¾ in., 19¢; 2 in., 20½¢
Tackle Blocks—See Blocks.

Pumps—
Cistern 60%
Pitcher Spout.....75&5@75&10%
Wood Pumps, Tubing, &c....50%
Barnes Dbl. Acting (low list).....45%
Barnes Pitcher Spout.....80%
Contractors' Rubber Diaphragm, No. 2. B. & L. Block Co.....$16.00
Daisy Spray Pump.....₱ doz. $6.50
Flint & Walling's Fast Mail Hand (low list).....50&5%
Flint & Walling's Fast Mail (low list) .....50&5%
Flint & Walling's Tight Top Pitcher 80%
National Specialty Mfg. Co., Measuring, Nos. 2, $6.00; 3, $5.50.....30%
Myers' Pumps (low list)..... } 50%
Myers' Power Pumps..... }
Myers' Spray Pumps..... }

Pump Leathers—
Plunger and Valve Leathers—Per gro.:

No.	1	2	3	4
	$5.00	6.00	7.00	8.00

Cup Leathers—Per 100:

Inch	2½	3	3½	4
	$5.00	7.00	9.00	12.00

} 30%

Punches—
Saddlers' or Drive, good, doz..50@75¢
Spring, single tube, good quality $1.75
Revolving (4 tubes)....*doz.$3.50*
Bemis & Call Co.'s Cast St'l Drive.50%
Morrill's Nos, 1AA, 1A, 1B, 1C, 1D, $15.00.....50%
Hercules, 1 die, each $5.00.....50%
Niagara Hollow Punches.....40%
Niagara Solid Punches.....55&10%
Tinners' Hollow, P., S. & W. Co..40%
Tinners' Solid, P., S. & W. Co., ₱ doz., $1.44.....40&10%

Rail—Barn Door, &c.—
Sliding Door, Painted Iron, 2½@2¾¢
Sliding Door, Wrought Brass, 1⅛ in., lb., 36¢.....30%
Cronk's:
Double Braced Steel Rail..₱ ft. 2¾¢
O. N. T. Rail.....2¾¢
Griffin's:
xxx, ₱ 100 ft., 1 x 3-16 in., $3.25; 1¼ x 3-16 in., $3.75.
Hinged Hanger, ₱ 100 ft., 1 x 3-16 in., $3.50; 1¼ x 3-16 in., $4.00.
Lane's:
Hinged Track, ₱ 100 ft.....$3.45
O. N. T., ₱ 100 ft., 1 in., $3.12½; 1¼ in., $3.45; 1½ in., $4.00.
Standard, 1¼ in.....₱ 100 ft. $4.00
Lawrence Bros.:
1 x 3-16 in., ₱ 100 ft., $7.50; 1¼ x 3-16 in., $8.75.....55&7½%
McKinney's:
Hinged Hanger Track, ₱ ft., 11¢. 60&5%
1 x 3-16 Track.....55&7½%
Myers' Stayon Track.....60&5%
Richards Mfg. Co.:
Common, 1 x 3-16 in., $3.00; 1¼ x 3-16, $3.25; 1¼ x 3-16, $3.50.
Special Hinged Hanger Rail..60&10%
Lag Screw Rail, No. 65.....50%
Gauge Trolley Track, ₱ ft., No. 31, 9¢; No. 32, 14¢; No. 33, 20¢.
No. 50.....60&10%
Nos. 61, $3.00; 62, $3.25; 63, $3.50; 64, $4.00; 65, $3.25; 66, $3.50; 49, No. 1, $3.25; 49, No. 2, $3.50.

Rakes—
NOTE.—Many goods are sold at net prices.
Fort Madison Red Head Lawn....$3.25
Fort Madison Blue Head Lawn....$2.75
Cronk's:
Steel Garden: Champion, ₱ doz., 12-tooth, $3.75; 14-tooth, $4.00; 16-tooth, $4.25; Ideal, ₱ doz., 12-tooth, $3.00; 14-tooth, $3.30; 16-tooth, $3.60.
Victor, 12-tooth, $2.25; 14-tooth, $2.50; 16-tooth, $2.75.
Queen City Lawn, ₱ doz., 20 teeth, $2.85; 24, $3.00.....net
Antelog Lawn, ₱ doz.....$4.00
Malleable Garden.....70&10%
Ideal Steel Garden, ₱ doz., 12 teeth, $15.00; 14, $16.00; 16, $18.00.....80%
Kohler's:
Jumbo Lawn, 36-tooth....₱ doz. $5.00
Lawn Queen, 20-tooth....₱ doz. $2.85
Lawn Queen, 24-tooth....₱ doz. $3.00
Paragon, 20-tooth.....₱ doz. $2.65
Paragon, 24-tooth.....₱ doz. $2.75
Steel Garden, 14-tooth....₱ doz. $2 40
Malleable Garden, 14-tooth, ₱ doz. $1.75@2.00

Rasps, Horse—
Disston's 75%
Heller Bros.....70&5@70&10&5%
Liveright Bros.' Gold Medal.70&10@75%
McCaffrey's American Standard..... 60&10&5%
New Nicholson.....70&10@75%
See also Files.

Razors—
John Engstrom Swedish.....65%
Sharp Shaver.....60%
Fox Razors, ₱ doz., No. 42, $24.00; No. 44, $20.00; No. 82, Platina, $36.00. } Dis. 50%

Reels, Fishing—
Hendryx:
M 6, Q 6, A 6, B 6, M 9¼, M 16, Q 16, A 16, B 16, 4008, Rubber, Populo, Nickeled Populo.....20%
Aluminum, German Silv., Bronze.25%
1210 N, 124 N.....20%
3004 N, 06 N, 6 RM, G 9.....25%
1 N, 6 PN, 24 N, 26 PN.....20%
2904 P, 33⅓%; 2904 PN, 33⅓%; 0924 N, 33⅓%; 02084 N, 33⅓%; 002904 PN, 33⅓%; 802 N, 33⅓%; 986 PN, 2904 N, 974 PN.....25%
5009 PN 5009 N.....20%
Competitor, 102 P, 102 PN, 202 P 202 PN, 102 PR, 202 PR.....20%
3M P, 304 PN, 00304 P, 00304 PN.33⅓%

Registers—*List July 1, 1903.*
Japanned, Electroplated and Bronzed 70%
White Porcelain Enamel..50&10%
Solid Brass or Bronze Metal.40%

Revolvers—
Single Action.....95¢@$1.00
Double Action, except 44 cal.$2.00
Double Action, 44 caliber...$2.00
Automatic $4.00
Hammerless $4.50

Riddles, Hardware Grade
16 in.....per doz.$2.50@$2.75
17 in.....per doz.$2.75@$3.00
18 in.....per doz.$3.00@$3.25

Rings and Ringers—
Bull Rings—

	2	2½	3 inch.
Steel	$0.70	0.75	0.80 doz.
Copper	$1.10	1.25	1.65 doz.

Hog Rings and Ringers—
Hill's Rings, gro. boxes $4.50@$4.50
Hill's Ringers, Gray Iron, doz., 60@75¢
Hill's Ringers, Malleable Iron, doz.80@95¢
Blair's Rings..per gro.$5.00@$5.50
Blair's Ringers...per doz.75@90¢

Rivets and Burrs—
Copper .....50@50&10%
Carriage, Coopers', Tinners', &c.: Black .....70&10%
Metallic Tinned.....70%

Bifurcated and Tubular—
Assorted in Boxes.
Bifurcated, per doz. boxes, pasteboard boxes, 50 count, 23@25¢; Tin boxes, 100 count, 29@32¢.
Tubular, per doz. boxes, 50 count, 29@32¢; 100 count, 51@58¢.

Rollers—
Cronk's Stay, No. 50.....$1.00
Cronk's Brinkerhoff No. 55, $0.60; No. 56, $0.75; No. 60.....$0.75
Lane's Stay.....40%
Richards' Stay:
Handy Adj. and Reversible No. 53.75¢
O. K. Adj. and Reversible No. 58.50¢
Lag Screw, Nos. 55 and 57.....50%
Underwriters', Nos. 59, 60.....50%
Favorite, No. 54.....60%

Rope—
Manila, 7-16 in. diam. and larger: Pure.....lb. 9½¢
Sisal, 7-16 in. diam. and larger: Pure.....lb. 7¢
Sisal, Hay, Hide and Bale Ropes, Medium and Coarse: Pure.....lb. 7½@7¾¢
Sisal, Tarred, Medium Lath Yarn: Pure.....lb. 6½@6¾¢
Cotton Rope: Best, ¼-in. and larger...18@20¢
Medium, ¼-in. and larger.16@17¢
Common, ¼-in. and larger..10¢
In coils, ½¢ advance.
Jute Rope: Thread, No. 1, ¼-in. and up, lb......6¼¢
Thread, No. 2, ¼-in. and up, lb......5¾¢

Wire Rope—
Galvanized .....3⅞@4¼%
Plain .....4⅝@2½%

Ropes, Hammock—
Covert Mfg. Co.:
Jute, 35%; Sisal.....20%

Rules
Boxwood .....60@60&10%
Ivory .....35&10@35&10&5%
Chapin-Stephens Co.:
Boxwood 60%
Flexifold 40%
Ivory .....25@25&10%
Miscellaneous .....50@50&10%
Stephens' Combination.....55%
Stationers' .....50@50&10%
Keuffel & Esser Co.:
Folding, Wood.....35&10%
Folding, Steel.....33⅓&10%
Lufkin's Steel.....50&10%
Lufkin's Lumber.....50&10%
Upson Nut Co.:
Boxwood .....60@60&10%
Ivory .....35&10@35&10&10%

Sash Balances—
See *Balance, Sash.*

Sash Locks—See *Locks, Sash.*

Sash Weights—
See *Weights, Sash.*

Sausage Stuffers or Fillers
See *Stuffers or Fillers, Sausage.*

Saw Frames—
See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Saws—

Atkins':
Circular 45%
Band ..... 50@50&10%
Butcher Saws 50%
Cross Cuts 35%
One-Man Cross Cut 40%
Narrow Cross Cut 50%
Hand, Rip and Panel ..... 35&5%
Miter Box and Compass 40%
Mulay, Mill and Drag 45%
Wood Saws ..... 40&10%
Chapin-Stephens Co.:
Turning Saws and Frames ..... 30@30&10%
Diamond Saw & Stamping Works:
Sterling Kitchen Saws ..... 30&10&10%
Disston's:
Circular, Solid and Ins'ted Tooth 50%
Band, 2 to 18 in. wide 60%
Band, ¼ to 1¾ 60%
Crosscuts 45%
Narrow Crosscuts 50%
Mulay, Mill and Drag 50%
Framed Woodsaws 25%
Woodsaw Blades 25%
Woodsaw Rods, Tinned 15%
Hand Saws, Nos. 12, 99, 9, 16, d100, D8, 120, 76, 77, 8 ..... 25%
Hand Saws, Nos. 7, 107, 107½, 3, 1, 0, 00, Combination 30%
Compass, Key Hole, &c. 25%
Butcher Saws and Blades 30%
C. E. Jennings & Co.'s:
Back Saws 16⅔%
Butcher Saws ..... 25&7½%
Compass and Key Hole Saws, ... 33⅓&7½%
Framed Wood Saws ..... 25&7½%
Hand Saws 12½%
Wood Saw Blades ..... 33⅓&7½%
Millers Falls:
Butcher Saws ..... 15&10%
Star Saw Blades ..... 15&10%
Massachusetts Saw Works:
Victor Kitchen Saws ..... 40&10&50%
Butcher Saws Blades ..... 35@40%
Peace & Richardson's Hand Saws 30%
Simonds':
Circular Saws 45%
Crescent Ground Cross Cut Saws 30%
One-Man Cross Cuts ..... 40&10%
Gang Mill, Mulay and Drag Saws 45%
Band Saws 50%
Back Saws ..... 25@25&7½%
Butcher Saws ..... 35@35&7½%
Hand Saws ..... 25@25&7½%
Hand Saws, Bay State Brand 45%
Compass, Key Hole, &c. ..... 25@25&7½%
Wood Saws ..... 40&7½%
Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws 50%

Hack Saw Blades and Frames—

Atkins' Hack Saw Blades A A A 25%
Disston's:
Concave Blades 25%
Keystone Blades 35%
Hack Saw Frames 30%
Simonds, 25%; The Best, 35%;
Culley 35%
C. E. Jennings & Co.'s:
Hack Saw Frames, Nos. 175, 180 ..... 40&7½%
Hack Saws, Nos. 175, 180, complete, ... 40&7½%
Goodell's Hack Saw Blades ..... 40&10%
Griffin's Hack Saw Frames ..... 35&5&10%
Griffin's Hack Saw Blades ..... 35&5&10%
Star Hack Saws and Blades ..... 15&10%
Sterling Hack Saw Blades ..... 30&10&5%
Sterling Hack Saw Frames ..... 30&10&10%
Sterling Power Hack Saw Machines, each, No. 1, $25.00; No. 2, $30.00 ..... 10%
Victor Hack Saw Blades 20%
Victor Hack Saw Frames 40%
Whitaker Mfg. Co.:
National Hand Blades, Hand Frames, Power Blades 40%

Scroll—

Barnes, No. 7, $15 ..... 25%
Barnes' Scroll Saw Blades 40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20 ..... 20%
Lester, complete, $10.00 ..... 15&10%
Rogers, complete, $3.50 and $4.00 .. 15&10%

Scales—

Union Platform, Plain ..... $2.10@2.20
Union Platform, Stpd ..... $2.20@2.30
Chatillon's:
Eureka 25%
Favorite 40%
Grocers' Trip Scales 50%
The Standard Portables 40%
The Standard R. R. and Wagon ..... 50&10%

Scrapers—

Box, 1 Handle ..... doz. $1.85@2.10
Box, 2 Handle ..... doz. $2.35@2.50
Ship ... Light, $2.00; Heavy, $4.50
Chapin-Stephens Co., Box ..... 30@30&10%
Richards Mfg. Co., Foot 60%

Screws—Bench and Hand

Bench, Iron, doz., 1 in., $2.50@ 2.75; 1⅛, $3.00@3.25; 1¼, $3.50@3.75
Bench, Wood ..... 20@20&10%
Hand, Wood ..... 70&10@70&10&10%
Chapin-Stephens Co., Hand ..... 70@70&10&2½%

Coach, Lag and Hand Rail—

Lag, Cone Point ..... 80&5@80&10%
Coach, Gimlet Point ..... 80@80&5%
Hand Rail ..... 70&10@75%

Jack Screws—

Standard List ..... 70&10@75%
Millers Falls ..... 50&10&10%
Swett Iron Works ..... 70@75%

Machine—

Cut Tread, Iron, Brass or Bronze:
Flat Head or Round Head, ... 80@80&10%
Fillister Head ..... 40@40&10%
Rolled Thread, F. H. or R. H., Iron ..... 75&10%
F. H. or R. H., Brass, Nos. 8 to 14 ..... 65&10%

Set and Cap—

Set (Iron) ..... 75&10&7½%
Set (Steel), net advance over Iron 25%
Sq. Hd. Cap ..... 70&10&7½%
Hex. Hd. Cap ..... 70&10&7½%
Rd. Hd. Cap ..... 50&7½%
Fillister Hd. Cap ..... 60&7½%

Wood—

List July 23, 1903.
Flat Head, Iron ..... 87½&5@.. %
Round Head, Iron ..... 85&5@.. %
Flat Head, Brass ..... 80&5@.. %
Round Head, Brass ..... 77½&5@.. %
Flat Head, Bronze ..... 75&5@.. %
Round Head, Bronze ..... 72½&5@.. %
Drive Screws ..... 87½&5@.. %

Scroll Saws—

See *Saws, Scroll.*

Scythes— *Per doz.*

Grass, No. 1, Plain $7.00
Clipper, Bronzed Webb $7.25
No. 3 Clipper, Pol'd Webb $7.50
No. 6 Clipper and Solid Steel $7.75
Bush, Weed and Bramble, Nos. 11, 12 and 13 ..... $7.25
Grain, No. 1 ..... $9.00@9.50
Bronzed Webb, No. 1 ..... $9.25@9.75
Nos. 3 and 4 Clipper, Grain, ... $9.50@10.00
Solid Steel, No. 6 ..... $10.00@10.50

Seeders, Raisin—

Enterprise ..... 25@30%

Sets— Awl and Tool—

Fray's Tool Handles, Nos. 1, $12; 2, $16; 3, $12 ..... 50%
Millers Falls Adj. Tool Handles, No. 1, $12; No. 4, $12; No. 5, $18 .. 20&10%

Garden Tool Sets—

Ft. Madison Three Plows, Hoe, Rake and Shovel ..... ℔ doz. sets $9.00

Sets, Nail—

Octagon ..... gro. $3.50@3.75
Buck Bros. 27½%
Mayhew's ..... ℔ gro. $9.00
Snell's Corrugated, Cup Pt. ..... 40&10%
Snell's Knurled, Cup Pt. ..... 40&10%
Victor Knurled, Cup Pt. ..... ℔ gro. $7.50

Rivet—

Regular list ..... 75@75&10%

Saw—

Atkin's:
Criterion 40%
Adjustable 40%
Disston's Star, Monarch and Triumph 30%
Morrill's No. 1 ..... $15.00
Nos. 3 and 4, Cross Cut $20.60
No. 5, Mill $30.00
Nos. 10, 11, 95 ..... $15.60
No. 1 Old Style $10.00
Special $16.25
Giant Royal Cross Cut ..... ℔ doz. $7.50
Royal, Hand ..... ℔ doz. $4.50
Taintor Positive ..... ℔ doz. $6.75

Shaving—

Fox Shaving Sets, No. 30 ..... ℔ doz., net, $24.00
Smith & Hemenway Co.'s 75%

Sharpeners, Knife—

Pike Mfg. Co.:
Fast Cut Pocket Knife Hones, ℔ doz. $1.50
Mounted Kitchen Sand Stone, ℔ doz. $1.50
Natural Grit Carving Knife Hones, ℔ doz. $3.00
Quick Cut Emery Carving Knife Hones, ℔ doz. $1.50
Quick Edge Pocket Knife Hones, ℔ doz. $2.50
} 50%

Skate—

Smith & Hemenway Co., Eureka .. 50%

Shaves, Spoke—

Iron ..... doz. $1.25
Wood ..... doz. $2.00
Bailey's (Stanley R. & L. Co.) 45%
Chapin-Stephens Co. ..... 30@30&10%
Goodell's, ℔ doz, $9.00 ..... 15&10%

Shears—

Cast Iron..	*7*	*8*	*9 in.*
Best	*$16.00*	*18.00*	*20.00 gro.*
Good	*$13.00*	*15.00*	*17.00 gro.*
Cheap	*$5.00*	*6.00*	*7.00 gro.*

Straight Trimmers, &c.:
Best quality Jap ..... 70@70&10%
Best quality Nickel ..... 60@60&10%
Tailors' Shears ..... 40@40&10%
Acme Cast Shears ..... 30@40&5%
Heinisch's Tailor's Shears 10%
National Cutlery Co.'s Nickel Plated, 60&10%; Japan Handles ..... 70&10%
Wilkinson Shear & Cutlery Co.:
Sheep, 1900 list ..... 30&10&5%
Grass ..... 50&10%
Horse or Mule ..... 50&10%
J. Wiss & Sons Co.:
Best Quality Jap'd ..... 60&10%
Best Quality Nickeled ..... 50&10%
Tailors' 25%

Tinners' Snips—

Steel Blades ..... 20&5@20&10%
Steel Laid Blades ..... 40&10@50%
Acme Cast Snips ..... 40@45&5%
Forged Handles, Steel Blades, Berlin 50%
Heinisch's Snips 40%
Jennings & Griffin Mfg. Co.'s 6½ to 10 in. ..... 33⅓&7½%
National Cutlery Co.'s Forged Steel 50%
Niagara Snips 40%
P. S. & W. Forged Handles, 25%; W. R. W. 50%
J. Wiss & Sons Co.:
Wiss Forged Steel 25%

Pruning Shears—

Cronk's Hand Shears 33⅓%
Cronk's Wood Handle Shears 33⅓%
Disston's Combined Pruning Hook and Saw, ℔ doz. $18.00 ..... 25%
Disston's Pruning Hook only, ℔ doz., $12.00 ..... 25%
J. T. Henry Mfg. Co.:
Pruning Shears, all grades 40%
P. S. & W. Co. ..... 40&10%
Columbian Cutlery Co.:
Hedge, Wilcut Brand ..... 60&10%
Lawn and Border, Wilcut Brand, ... 60&10%

Sheaves—Sliding Door—

Reading 40%
R. & E. list 15%

Sliding Shutter—

Reading list 40%
R. & E. list 15%

Shells—Shells, Empty—

Brass Shells, Empty:
Climax, 10 and 12 gauge ..... 60&5%
Club, Rival, 65&5%; First Quality, ... 60&5%
Paper Shells, Empty:
New Rapid, 10, 12, 16 and 20 gauge, ... 25&10%
Climax, 10 and 12 gauge; Acme and Magic, 10, 12, 16 and 20 gauge; Ideal, 10, 12, 16 and 20 gauge; Leader grade ..... 25&5%
Union, League, 10 and 12 gauge, Rival Grade 25%
New Climax, Defiance, 10, 12, 14, 16 and 20 gauge; Climax, 14, 16 and 20 gauge 20%
Challenge, Monarch, 10, 12, 16 and 20 gauge; League, Union, 14, 16 and 20 gauge; Repeater Grade .. 20%

Shells, Loaded—

Loaded with Black Powder 40%
Loaded with Smokeless Powder, medium grade ..... 40&5%
Loaded with Smokeless Powder, high grade ..... 40&10&10%
Union Metallic Cartridge Co.:
New Club, Black Powders 40%
Nitro Club, Smokeless Powders ..... 40&5%
Arrow, Smokeless Powders ..... 40&10&10%
Winchester:
Smokeless Repeater Grade ..... 40&5%
Smokeless Leader Grade ..... 40&10&10%
Black Powder 40%

Shingles, Metal— Per Sq.

Edwards Mfg. Co.:

	Painted.	Galv.
14 x 20	$4.25	$6.00
10 x 14	4.50	6.25
7 x 10	4.75	6.50

Wheeling Corrugating Co.:

Dixie, 14 x 20 in.	$4.05	$5.05
Dixie, 10 x 14 in.	4.25	5.45
Dixie, 7 x 10 in.	5.25	6.70

Shoes, Horse, Mule, &c.—

F.o.b. Pittsburgh:
Iron ..... per keg. $4.10
Steel ..... per keg. $5.85
Burden's, all sizes ..... ℔ keg $3.90

Shot—

25-lb. bag.
Drop, up to B $1.75
Drop, B and larger 2.00
Buck 2.00
Chilled 2.00
Dust 2.30

Shovels and Spades—

Association List, Nov. 15, 1902 ..... 40%
Avery Stamping Co. 40%

Snow Shovels—

Long Handle ..... $3.25@$3.50
Wood and Mail, D Handle, $3.75@$4.00

Sieves and Sifters—

Hunter's Imitation, gro. $9.50
Hunter's Genuine, per gro. .. $12.00

Sifters, Ash—

Acme Ball Bearing Sales Co., Acme Automatic Ash Sifter, each, $3.25; ℔ doz. $39.00

Sieves, Seamless Metallic

	Per dozen.			
Mesh	*14*	*16*	*18*	*20*
Iron Wire	*$1.05*	*1.05*	*1.10*	*1.20*
Tinned Wire	*$1.15*	*1.15*	*1.20*	*1.30*

Sieves, Wooden Rim—

Nested, 10, 11 and 12 Inch.
Mesh 18, Nested ..... doz. $0.90@0.95
Mesh 20, Nested ..... doz. $1.00@1.05
Mesh 24, Nested ..... doz. $1.30@1.40

Sinks, Cast Iron—

Painted, Standard list:
12 x 12 to 22 x 36 in. 60%
20 x 24 to 24 x 50 in. 50%
24 x 60 to 24 x 120 in. 30%
Barnes' low list 60%
NOTE.—There is not entire uniformity in lists used by jobbers.

Skeins, Wagon—

Cast Iron ..... 70@75&10%
Steel ..... 40@45%

Slates, School—

Factory Shipments.
"D" Slates ..... 50@50&10%
Eureka, Unexcelled Noiseless .. 60&7 tens.
Victor A, Noiseless .. 60&4 tens 65%

Slaw Cutters—See *Cutters.*

Snaps, Harness—

German ..... 40@40&10%
Covert Mfg. Co.:
Derby, 25%; Yankee, 30&2%; Yankee Roller, 30&2%
High Grade, 40%; Trojan 40%
Jockey 25%

Snaths—

Scythe 60%

Snips, Tinners—See *Shears.*

Spoons and Forks—

Silver Plated—

Good Quality ..... 50&10@60&5%
Cheap ..... 60@60&10%
International Silver Co:
1847 Rogers Bros. ..... 40&10%
Rogers & Bro., William Rogers' Eagle Brand ..... 50&10%
Anchor, Rogers Brand 60%
Wm. Rogers & Son ..... 60&10%

Miscellaneous

German Silver ..... 60@60&5%

Tinned Iron—

Teas ..... per gro. 50@55¢
Tables ..... per gro. $0.90@$1.00
Atlas Mfg. Co.:
Tea Spoons, ℔ gro. ..... 50¢@55¢
Table Spoons, ℔ gro. ..... $0.90@$1.00

Springs— Door—

Bardsley's Spring and Check 40%
Chicago (Coil) ..... 40&10%
Gem (Coil) 20%
Pullman Door and Gate 10%
Reliance (Coil) ..... 40&10%
Star (Coil) 35%
Torrey's Rod, 39 in. ..... ℔ doz. $1.00

Carriage, Wagon, &c.—

1¼ in. and Wider: Per 100 lb.
Black ..... $4.75@$5.00
Half Bright ..... $4.75@$5.00
Bright ..... $5.25@$5.50
Painted Seat Springs:
1½ x 2 x 26 .... per pair. 45@47¢
1½ x 3 x 28 .... per pair. 68@71¢

Sprinklers, Lawn—

American Foundry & Mfg. Co.:
Cactus, 65%; Japanese, 70%; National, ℔ doz. $12.00
Enterprise ..... 25@30%
Philadelphia No. 1, ℔ doz, $12; No. 2, $15; No. 3, $20 ..... 30%

Squares—

Nickel plated .. } List Jan. 5, 1900.
Steel and Iron . } 80@80&5%
Rosewood Hdl. Try Square and T-Bevels ..... 60&10&10@70%
Iron Hdl. Try Squares and T-Bevels ..... 40&10@40&10&10%
Disston's Try Squares and Bevels, Rosewood Handle, 60 & 10%; Iron Stock and Bevel 15%

Squeezers, Lemon

Wood, Porcelain Lined:
Cheap ..... doz. $1.00
Good Grade ..... doz. $1.25
Tinned Iron ..... doz. $0.75@1.00
Iron, Porcelain Lined ... doz. $1.75
Victor, ℔ gro. $9.00

Staples—

Barbed Blind ..... 85&5@85&10%
Electricians' ..... 80&10&10@85%
Fence Staples, Polished, $2.05; Galvanized $2.35
Poultry Netting Staples ..... per lb. 3¼@3½¢

Steels, Butchers'—

Dick's 30%
Foster Bros. 30%

Steelyards— .... 30@30&10%

Stocks and Dies—

Blacksmiths' ..... 50@50&10%
Curtis Rev'ble Ratchet Die Stock .. 25%
Derby Screw Plates 25%
Green River 25%
Lightning Screw Plate 25%
Little Giant 25%
Reece's New Screw Plate 25%

Stoners, Cherry—

Enterprise ..... 25@30%

Stones, Axe—

Pike Mfg. Co., Axe Stones (all kinds) 33⅓%

Glass Cutters' Stones—

Pike Mfg. Co., Glass Cutters' Stones and Supplies 40%

Stones, Oil, &c.—

Pike Mfg. Co., 1907 list: ℔ lb.
Arkansas St, No. 1, 3 to 5½ in. $2.80
Arkansas St, No. 1, 5½ to 8 in. $3.50
Arkansas Slips No. 1 ..... $4.00
Lily White Washita, 4 to 8 in. 60¢
Rosy Red Washita, 4 to 8 in. 70¢
Washita St., Extra, 4 to 8 in. 50¢
Washita St., No. 1, 4 to 8 in. 40¢
Washita St., No. 2, 4 to 8 in. 25¢
Lily White Slips ..... 90¢
Rosy Red Slips ..... 90¢
Washita Slips, Extra ..... 80¢
Washita Slips, No. 1 ..... 70¢
Washita Slips, No. 2 ..... 40¢
India Oil Stones (entire list) 33⅓%
Quickcut Emery and Corundum Oil Stone, Double Grit 40%
Quickcut Emery and Corundum Axe Stone, Double Grit 33⅓%
Quickcut Emery Rubbing Bricks .. 40%
Hindostan No. 1, R'g'lar ..... ℔ lb 8¢
Hindostan No. 1, Small ..... ℔ lb 10¢
Turkey Oil Stones, Extra, 5 to 8 in. ..... ℔ lb 80¢
Queer Creek Stones, 4 to 8 in. 20¢
Queer Creek Slips ..... 40¢
Sand Stone ..... 6¢

} 33⅓%
} 33⅓%

Scythe Stones—

Pike Mfg. Co., 1907 list:
Black Diamond S. S. ₱ gro. $12.00
Lamoille S. S. ₱ gro. $11.00
White Mountain S. S. ₱ gro. $9.50
Green Mountain S. S. ₱ gro. $7.00
Extra Indian Pond S. S. ₱ gro. $8.00
No. 1 Indian Pond S. S. ₱ gro. $7.50
No. 2 Indian Pond S. S. ₱ gro. $5.00
Leader Red End S. S. ₱ gro. $5.00
Quick Cut Emery ₱ gro. $10.00
Pure Corundum ₱ gro. $18.00
Crescent $7.00
Emery Scythe Rifles, 2 Coat. $8.80
Emery Scythe Rifles, 3 Coat. $11.00
Emery Scythe Rifles, 4 Coat. $13.20
Balance of 1907 list 33⅓%.
Electro (Artificial), ₱ gro., $12.00 33⅓%
$12.00 33⅓%
Lightning (Artificial), ₱ gro. $18.00 33⅓%

Stoppers, Bottle—

Victor Bottle Stoppers ₱ gro. $9.00

Stops— Bench—

Millers Falls 15&10%
Morrill's, ₱ doz., No. 1, $10.00 50%
Morrill's, No. 2, $12.50 50%

Door—

Chapin-Stephens Co. 50@50&10%

Plane—

Chapin-Stevens Co. 20%

Straps— Box—

Acme Embossed, case lots 20&10&10%
Cary's Universal, case lots 20&10&10%

Stretchers, Carpet—

Cast Iron, Steel Points, doz. 55¢
All Steel Socket, doz. $2.00@2.25
Excelsior Stretcher and Tack Hammer Combined, ₱ doz., $6.00 20%

Stuffers, Sausage—

Enterprise Mfg. Co., Stuffers and Lard Presses 25@25&7½%
National Specialty Co., list Jan. 1, 1902 30&5%
P., S. & W. Co. 40&10&5%

Sweepers, Carpet—

Per doz.—
Bissell Carpet Sweeper Co.:
Cyco Bearing Superba, $36.00; Triumph, $33.00; Parlor Queen, $30.00; Elite, $29.00; Boudoir, $27.00; American Queen, $27.00; Ideal, $25.00; Gold Medal, $24.00; Primier, $24.00; Prize, $24.00; Welcome, $24.00; Grand Rapids, Nickel, $24.00; Japan, $22.00; Crystal, $36.00; Grand, $36.00; Parlor Grand, $48.00; Club, $54.00; Hall, $60.00; Standard Nickel, $22.00; Standard Japan, $20.00; Crown Jewel, Nickel, $21.00; Crown Jewel, Japan, $19.00; Junior, Nickel, $22.00; Junior, Japan, $20.00.

NOTE.—Rebates: 50c per dozen on three dozen lots; $1 per dozen on five-dozen lots; $2 per dozen on ten-dozen lots.

Tacks, Finishing Nails, &c.

American Carpet Tacks 90&40%
American Cut Tacks 90&40%
Swedes' Cut Tacks 90&40%
Swedes' Upholsterers' 90&50%
Gimp Tacks 90&50%
Lace Tacks 90&50%
Trimmers' Tacks 90&40%
Looking Glass Tacks 60%
Bill Posters' and Railroad Tacks 90&50&10%
Hungarian Nails 80&20%
Finishing Nails 70%
Trunk and Clout Nails 80&10%

NOTE.—The above prices are for Straight Weights.

Miscellaneous—

Double Pointed Tacks, 90&6 tens@—%
See also Nails, Wire.

Tanks, Oil and Gasoline—

Wilson & Friend Co.: Gal.	Gasoline	Oil
30	$2.75	$3.00
60	$3.50	$4.00
110	$5.00	$5.75

Tapes, Measuring—

American Asses' Skin 50@—%
Patent Leather 25@30&5%
Steel 33⅓&5%
Chesterman's 25@25&5%
Keuffel & Esser Co.:
Favorite, Ass Skin 40&10@50%
Favorite, Duck and Leather 25&5@25&10%
Metallic and Steel, lower list, 35@35&5%; Pocket, 35@35&5%.
Lufkins:
Asses' Skin 40&10@50%
Metallic 30@30&5%
Patent Bend, Leather 25&5@25&10%
Pocket 40@40&5%
Steel 33⅓@35%
Wiebusch & Hilger:
Chesterman's Metallic, No. 34L, etc. 25%
Chesterman's Steel, No. 1038L, etc. 35%

Teeth, Harrow—

Steel Harrow Teeth, plain or headed, ⅝-inch and larger, per 100 lb $2.55@$2.80

Thermometers—

Tin Case, Cabinet, Flange, Dairy, &c. 30@35%

Ties, Bale—Steel Wire—

Single Loop 85½&10%
Monitor, Cross Head, &c. 70&5&2½%

Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

Tire Benders, Upsetters, &c.

See *Benders and Upsetters, Tire.*

Tools—Coopers'—

L. & I. J. White 20@20&5%

Tools—Haying—

Myers' Hay Tools 50%

Tools—Ice Tools—

Gifford-Wood Co. 15%

Tools—Miniature—

Smith & Hemenway Co.'s, Davidson, ₱ doz., Nickel Plated, $1.50; Gold Plated $2.00

Tools—Saw—

Atkins' Cross Cut Saw Tools 35&5%
Simond's Improved 33⅓%
Simonds' Crescent 30%

Tools—Ship—

L. & I. J. White 25%

Transom Lifters—

See *Lifters, Transom.*

Traps—Fly—

Balloon, Globe or Acme, doz., $1.15@$1.25; gro. $11.50@12.00
Harper, Champion or Paragon, doz., $1.25@1.40; gro. $13.00@13.50

Traps—Game—

Imitation Oneida 75@10%
Newhouse 50&5%
Hawley & Norton 65&10%
Victor 75@75&10%
Oneida Community Jump 70&5%
Stop Thief 60%
Tree Trap 60%
Hector 75@75&10%

Traps—Mouse and Rat—

Mouse, Wood, Choker, doz. holes, 12¢
Mouse, Round or Square Wire, doz. 85@90¢
Marty French Rat and Mouse Traps (Genuine), ₱ doz.:

	Crate lots.	Small lots.
No. 1, Rat	$11.50	$14.50
No. 3, Rat	$5.75	$6.50
No. 3½, Rat	$4.70	$5.25
No. 5, Mouse	$2.25	$3.00

Animal Trap Co.:
Out o' Sight, Mouse, ₱ doz. $0.60
Out o' Sight, Rat, ₱ doz. 1.20
Easy Set, Mouse, ₱ doz. .35
Easy Set, Rat, ₱ doz. .85
Out o' Sight Chockers, ₱ doz. holes .12
Out o' Sight, Tin, 5-hole, ₱ doz. traps .75

Trowels—

Disston Brick and Pointing 25%
Disston Plastering 20%
Disston "Standard Brand" and Garden Trowels 30%
Kohler's Steel Garden Trowels, ₱ gro., 5 in., $4.80; 6 in., $6.00.
Never-Break Forged Steel Garden Trowels, in bulk, net ₱ gro. $5.50
In 1 doz. boxes ₱ gro. $6.00
Woodrough & McParlin, Plastering 25%

Trucks, Warehouse, &c.—

B. & L. Block Co.:
New York Pattern 50&10%
Western Pattern 60&10%
Handy Trucks ₱ doz. $16.00
Grocery ₱ doz $15.00
McKinney Trucks each, net $10.00
Model Stove Trucks ₱ doz $18.50

Tubs, Wash—

M'f'gr's list, price per gross.
No. 0 1 2 3
Galvanized $67 $79 $89 $99 10&7½ &5&5%

Twine, Miscellaneous—

Flax Twine:
No. 9, ¼ and ½-lb. Balls 21@23¢
No. 12, ¼ and ½-lb. Balls 19@21¢
No. 18, ¼ and ½-lb. Balls 16@18¢
No. 24, ¼ and ½ -lb. Balls 13½@17½¢
No. 36, ¼ and ½-lb. Balls 15@17¢
Chalk Line, Cotton ¼-lb. Balls 24@89¢
Cotton Mops, 6, 9, 12 and 15 lb. to doz 84½@19¢
Cotton Wrapping, 5 Balls to lb., according to quality 13½@19¢
American 2-Ply Hemp, ¼ and ½-lb. Balls 12½@15¢
American 3-Ply Hemp, 1-lb. Balls 13½@16¢
India 2-Ply Hemp, ¼ and ½-lb. Balls (Spring Twine) 7½@9¢
India 3-Ply Hemp, 1-lb. Balls 7¼@9¢
India 3-Ply Hemp, 1½-lb. Balls 7@8½¢
2, 3, 4 and 5-Ply Jute, 1½-lb. Balls 9@1¢
Mason Line, Linen, ½-lb. Bls. 17¢
No. 264 Mattress, ¼ and ½ lb. Balls, according to quality 30@60¢
Wool, 3 to 6 ply B 6¢; A 7½¢

Vises—

Solid Box 50&5@50&10&5%

Vises—Parallel—

Athol Machine Co.:
Simpson's Adjustable 40%
Standard 40%
Amateur 25%
Columbian Hdw. Co., 40&5%:
Slide 65%
Fisher & Norris Double Screw, net, each, Nos. 2, $10.50; 3, $16.00; 4, $20.50; 5, $27.00; 6, $32.00.
Fulton Mach. & Vise Co.:
F. & R. Double Swivel Machinists' 40%
Star, Solid Jaw, Machinists' 40%
Hollands':
Machinists' 40@40&5%
Keystone 65&5@70%
Lewis Tool Co.:
Adjustable Jaw 30%
Monarch, 50%; Solid Jaw 50%
Massey Vise Co.:
Clincher 40%
Parallel Bar 15%
Perfect, 15%; Lightning Grip 15%
Merrill's 25%
Millers Falls Oval Slide Pattern 60&10%
Parker's:
Victor, 20@25%; Regulars 20@25%
Vulcan's 40@45%
Combination Pipe 55&60%
Prentiss 20@25%
Rock Island 25%
Snediker's X. L. 33⅓%
Stephens' 33⅓%

Saw Filers

Disston's D 3 Clamp and Guide, ₱ doz., $24.00, 30%; Clamps 30%
Perfection Saw Clamps, ₱ doz. $1.50
Reading 60%

Wood Workers—

Fulton Mach. & Vise Co.:
F. & R. Double Swivel Coachman's 40%
Star Solid Jaw Woodworkers' 60%
Massey Vise Co.:
Lightning Grip, 15%; Perfect 15%
Wyman & Gordon's Quick Action, 6 in., $6.00; 9 in. $7.00; 14 in., $8.00.

Miscellaneous—

Fulton Machine & Vise Co., Combination Pipe 70%
Holland's Combination Pipe 60@60&5%
Massey's Quick Action Pipe 40%
Parker's Combination Pipe:
87 Series, 60%; 187 Series, 60&5%; No. 870, 40%.
Rock Island Pipe 25%

Wads—*Price per M.*

B. E., 11 up 60¢
B. E., 9 and 10 70¢
B. E., 8 80¢
B. E., 7 80¢
P. E., 11 up $1.00
P. E., 9 and 10 1.25
P. E., 8 1.50
P. E., 7 1.50
Dis. 15%
Ely's B. E., 11 and larger $1.70@1.75
Ely's P. E., 12 to 20 $3.00@3.25

Ware, Hollow—Cast Iron, Hollow—

Stove Hollow Ware:
Enameled 15&10%
Ground 50&5%
Plain or Unground 60%
Country Hollow Ware, per 100 lbs $2.75@$3.00
White Enameled Ware:
Maslin Kettles 65&10%
Covered Wares:
Tinned and Turned 35&10%
Enameled 15&10%
See also *Pots, Glue.*

Ware, Hollow—Enameled—

Agate Nickel Steel Ware 33⅓%
El-an-ge 60&10%
Iron Clad Ware 70&10%
Lava and Volcanic, Enameled 40&10%

Ware, Hollow—Tea Kettles—

Galvanized Tea Kettles:

Inch	6	7	8	9
Each	45¢	50¢	55¢	65¢

Ware, Hollow—Steel Hollow Ware—

Avery Stamping Co.:
Never-Break Spiders and Griddles 65&10%
Steel Kettles, Maslins Scotch Bowls, Tin'd 60%
Steel Stew Pans, Stew Pots, etc. Porcelained 50%
Cleveland Stamping & Tool Co.:
Solid Steel Spiders and Griddles 65&5%
Solid Steel Kettles 60&5%

Warmers, Foot—

Pike Mfg. Co., Soapstone 40@40&10%

Washboards—

No. ₱ doz.
810—Brass King, Single Surface, Open Back $2.80
862—White Hen, Spiral Grimp Glass $3.35
864—Royal Blue Enamel, Single Surface, Ventilated Back $3.35
172—Our Best, Single Zinc, Soap Drainer $3.35
722—Soap Saver, Single Zinc, Iron Top $3.35
100—Northern Queen, Single Zinc, Perforated, Open Back $3.00
134—Universal, Single Zinc, Extra Family Size, Ventilated Back $2.80
769—Banner Globe, Single Zinc, Ventilated Back $2.25
57—Peerless, Double Zinc, Spring Protector $3.70
56—Red Cross, Double Zinc, Swing Protector $3.60
17—North Star, Solid Zinc, Swing Protector $3.60
797—Jewel, Single Zinc, Fall Size $1.25

Washers—Leather, Axle—

Solid 90@90&10%
Patent 90@90&5%
Coil: ⅛ 1 1⅛ 1¼ *inch.*
9¢ 10¢ 11¢ 14¢ *per box.*

Washers—Iron or Steel—

Size bolt ⅜ ½ ⅝ ¾ ⅞
Washers $1.65 3.75 2.45 2.25 2.05

The above prices are based on $6.75 off list.

In lots less than one keg add 1½¢ per lb.; 5-lb. boxes add ½¢ to list.

Avery Stamping Co.:
Standard, in 200 lb kegs, $6.00 ₱ 100 lb. discount; in 100 lb kegs, add 10¢ net ₱ 100 lb; in 5 or 10 lb boxes, add 50¢ net ₱ 100 lb; in 1 lb boxes, add $1.00 net ₱ 100 lb.

Washers—Cast Washers—

Over ½-inch, barrel lots, per lb. 1½@1¾¢

Wedges—

Oil Finish lb., 2¼@2¾¢

Weights—Hitching—

Covert Mfg. Co. 30&2%

Sash—

Per net ton, f.o.b. factory:
Eastern District $21.00@—
Western and Central Districts $20.00@$22.00

Wheels, Corundum and Emery—

Pike Mfg. Co., Corundum, 65%; Emery 75%

Well—

8-in., $2.00; 10-in., $2.30; 12-in., $3.00; 14-in., $4.45.

Wire and Wire Goods—

Bright and Annealed:
6 to 9 72&10&7½%
10 to 18 72½&10&10%
19 to 26 75&10&10&2½%
27 to 36 77½&7½%
Galvanized:
6 to 9 72½&10%
10 to 14 72½&10&5%
15 to 16 72½&10&5%
17 to 18 72½%
19 to 26 70&5&2½%
27 to 36 65&10&10%
Coppered:
6 to 9 65&10&10%
10 to 14 70&10&5%
15 to 18 65&10&10&10%
19 to 26 70&5&2½%
27 to 36 72½&10&2½%
Tinned:
6 to 18 67&10&10%
Brass 15½¢ *lb., base*
Copper 15¼¢ *lb., base*
Cast Steel Wire 50%

Wire, Spooled—

Annealed and Tinned 75%
Brass and Copper 70%
Retailers' Assortments, per box $2.00@$2.25

Wire Clothes Line, See Lines.
Wire Picture Cord, see Cord.

Wire Goods—Bright Wire Goods—

Steel Wire Goods 90&10%
Brass Wire Goods 90&10%
Brass Cup and Shoulder Hooks, 85&10%

Wire Cloth and Netting—

Galvanized Poultry Netting, 80&2½&80&7½%
Painted Screen Cloth, 100 ft., $1.35
Standard Galv. Hardware Grade: 100 ft. rolls, 2½ to 48 in. wide, Per 100 sq. ft.
Nos. 2, 2½ and 3 Mesh $2.75
Nos. 4 and 5 Mesh $3.00
No. 6 Mesh $3.25
Nos. 7 and 8 Mesh $3.75

Wire, Barb—See *Trade Report*

Wrenches—

Agricultural, 80&10&5@80&10&10%
Alligator or Crocodile 70&10@75%
Baxter Pattern S Wrenches, 70&5@70&10%
Drop Forged S 45@45&5%
Acme 60&10%
Alligator Pattern, 70%; Bull Dog 70%
Bemis & Call's:
Adjustable S, 40&5%; Adjustable S Pipe, 40&5%; Briggs Pattern, 40%; Combination Bright, 50%.
Steel Handle Nut 50&5%
Combination Black 50&5%
Merrick Pattern 50&5%
Boardman's 40%
Coes' Genuine Knife Hdl. 40&10&5&5%
Coes' Genuine Steel Hdl. 40&10&5&5%
Coes' Genuine Key Model. 40&10&5&5%
Coes' Genuine Hammer Handle 40&10&5&5%
Coes' "Mechanics'" 40&10&10&5&5%
Donohue's Engineer 40&10%
Eagle 70%
Gem Pocket 30%
Hercules 70%
W. & B. Machinist:
Case lots 50&10%
Less than case lots 50%
W. & B. Railroad Special:
Case lots 50%
Less than case lots 40&10&5%
Solid Handles, P., S. & W. 50&10%; full cases 50&10&5%
Standard Nipple Mfg. Co.:
Duplex Chain 50%
Uwanta Wrench Co.:
Uwanta Special, Iron Handle 40&10&5%
Other Wrenches 50%
Vulcan and Agrippa Chain 50%
Whitaker Machinists' 50&10%

Fruit Jar—

Benj. P. Forbes, Triumph, ₱ gro., $7.50; per doz. $0.90

Wrought Goods—

Staples, Hooks, &c., list March 17, '92 90@—%

Zinc—(*Cask lots at mill.*)

Sheet per 100 lb., $7.00

For the Table of "Current Metal Prices" see the First Issue of Every Month.

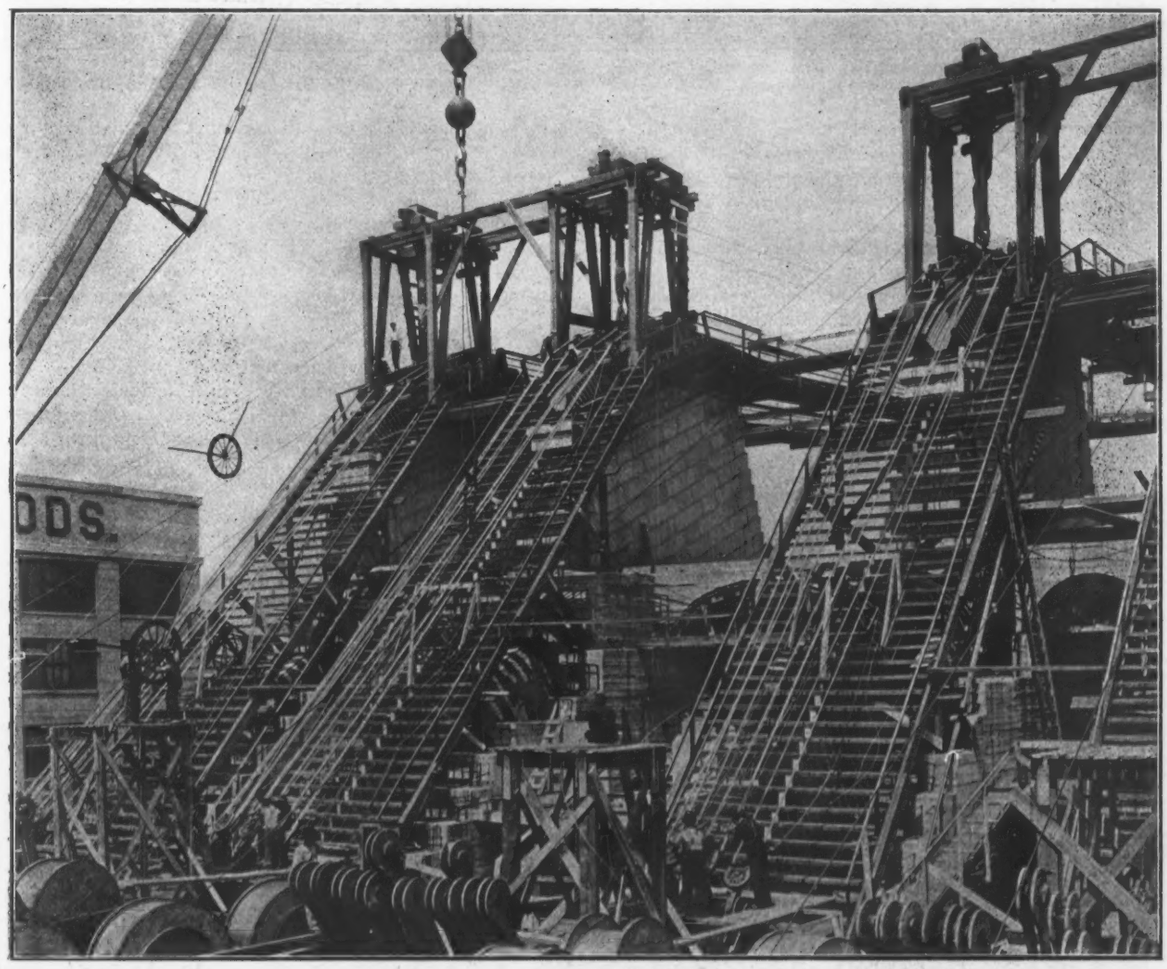
THE IRON AGE

New York, Thursday, September 17, 1908.

The Cables for the New Manhattan Bridge.

BY H. R. COBLEIGH.

Work on the Manhattan bridge across the East River connecting the boroughs of Manhattan and Brooklyn, New York City, has reached the point where the four permanent supporting cables are being assembled. Each cable will contain 9472 wires, which will be put in place as 37 strands of 256 wires each, and finally compacted into a circular cross section of a diameter of about 21½ in. Each wire is 0.195 in. in diameter (a little over 3-16 in.), and has a tensile strength of about 6000 lb., making the strength of each cable over 28,000 tons. The weight of the four cables will be over 6000 tons. Four strands of each of the four cables are now complete, and it is estimated that in a little over four months the cables will be finished and in position ready for the hanging of the suspenders and the beginning of the structural work.



View at the Brooklyn Anchorage.—The Traveling Sheave Working on the Left-Hand Cable Has Just Started. The Sheave Over the Scaffold Has Finished a Trip and Is Being Made Ready to Return, While the Bight of the Wire Is Being Passed Around One of the Shoes.

The manner of hauling the cables and the machinery involved holds a particular interest because of the speed with which it is being done and the improvements which have been made in the method of doing the work since the cables for the Williamsburg bridge were strung. The wires were of the same size in that case, but the plant was operated by steam engines and only two double wires were laid at a time. In the Manhattan bridge plant the stringing of eight wires can be in progress at once and the motive power is electricity. For stringing the wires of each of the four cables there is an independent equipment so that a delay from any cause on the work on any one does not affect the others.

The operation of stringing the wires of one cable as described in the following is identical for each of the other three. The stringing is accomplished by two traveling sheaves 3 ft. in diameter, suspended by wrought iron brackets from an endless ¾-in. steel rope. This rope extends from anchorage to anchorage and back again, and at the Brooklyn end makes two passes around a traction wheel. The grooved traveling sheaves are attached in diametrically opposite relation on the hauling rope, so that they move across the bridge in opposite directions. The brackets supporting the wheels are offset where they are attached to the rope, being provided at those points with what are termed goosenecks. This is for the purpose of clearing the idler wheels that support the hauling rope at the required hight above the position of the cable and at 11 practically equidistant points in each run of the rope. The idlers are carried by wooden gantrys on

Scythe Stones—

Pize Mfg. Co., 1907 list:
Blacs Diamond S. S., ₱ gro. $12.90
Lamoille S. S., ₱ gro. $11.00
White Mountain S. S., ₱ gro. $9.50
Green Mountain S. S., ₱ gro. $7.00
Extra Indian Pond S. S., ₱ gro. $8.00
No. 1 Indian Pond S. S., ₱ gro. $7.50
No. 2 Indian Pond S. S., ₱ gro. $5.00
Leader Red End S. S., ₱ gro. $5.00
Quick Cut Emery, ₱ gro. $10.00
Pure Corundum, ₱ gro. $18.00
Crescent $7.00
Emery Scythe Rifles, 2 Coat, $8.80
Emery Scythe Rifles, 3 Coat, $11.00
Emery Scythe Rifles, 4 Coat, $13.20
Balance of 1907 list, 33⅓%
Lectro (Artificial), ₱ gro., $12.00, 33⅓% $12.00 .....
Lightning (Artificial), ₱ gro. $18.00 ..... 33⅓%

Stoppers, Bottle—

Victor Bottle Stoppers..... ₱ gro. $9.00

Stops— Bench—

Millers Falls..... 15&10%
Morrill's, ₱ doz., No. 1, $10.00.... 50%
Morrill's, No. 2, $12.50..... 50%

Door—

Chapin-Stephens Co..... 50@50&10%

Plane—

Chapin-Stevens Co..... 20%

Straps— Box—

Acme Embossed, case lots..20&10&10%
Cary's Universal, case lots...20&10&10%

Stretchers, Carpet—

Cast Iron, Steel Points..doz. 55¢
All Steel Socket...doz. $2.00@$2.25
Excelsior Stretcher and Tack Hammer Combined, ₱ doz., $6.00....20%

Stuffers, Sausage—

Enterprise Mfg. Co., Stuffers and Lard Presses..... 25@25&7½%
National Specialty Co., list Jan. 1, 1902 ..... 30&5%
P., S. & W. Co..... 40&10&5%

Sweepers, Carpet— Per doz.—

Bissell Carpet Sweeper Co.:
Cyco Bearing Superba, $36.00; Triumph, $33.00; Parlor Queen, $30.00; Elite, $29.00; Boudoir, $27.00; American Queen, $27.00; Ideal, $25.00; Gold Medal, $24.00; Primier, $24.00; Prize, $24.00; Welcome, $24.00; Grand Rapids, Nickel, $24.00; Japan, $22.00; Crystal, $36.00; Grand, $36.00; Parlor Grand, $48.00; Club, $54.00; Hall, $60.00; Standard Nickel, $22.00; Standard Japan, $20.00; Crown Jewel, Nickel, $21.00; Crown Jewel, Japan, $19.00; Junior, Nickel, $22.00; Junior, Japan, $20.00.

NOTE.—Rebates: 50¢ *per dozen on three dozen lots;* $1 *per dozen on five-dozen lots;* $2 *per dozen on ten dozen lots.*

Tacks, Finishing Nails, &c.

*American Carpet Tacks...*90&40%
*American Cut Tacks.....*90&40%
*Swedes' Cut Tacks.....*90&40%
*Swedes' Upholsterers'....*90&50%
*Gimp Tacks.....*90&50%
*Lace Tacks.....*90&50%
*Trimmers' Tacks.....*90&40%
*Looking Glass Tacks.....*65%
Bill Posters' and Railroad Tacks. 90&50&10%
*Hungarian Nails.....*80&20%
*Finishing Nails.....*70%
*Trunk and Clout Nails...*80&10%

NOTE.—The above prices are for Straight Weights.

Miscellaneous—

Double Pointed Tacks, 90&6 tens@—%

See also Nails, Wire.

Tanks, Oil and Gasoline—

Wilson & Friend Co.:

Gal.	Gasoline	Oil
30	$2.75	$3.00
60	$5.50	$4.00
110	$5.00	$5.75

Tapes, Measuring—

*American Assoc' Skin....*50@—%
*Patent Leather.....*25&10&5%
Steel ..... 33⅓&5%
Chesterman's ..... 25@25&5%
Keuffel & Esser Co.:
Favorite, Ass Skin..... 40&10@50%
Favorite, Duck and Leather..... 25&5@25&10%
Metallic and Steel, lower list, 35@35&5%; Pocket, 35@35&5%.
Lufkins:
Asses' Skin..... 40&10@50%
Metallic ..... 30@30&5%
Patent Bend, Leather...25&5@25&10%
Pocket ..... 40@40&5%
Steel ..... 33⅓@35%
Wiebusch & Hilger:
Chesterman's Metallic, No. 34L, etc. 25%
Chesterman's Steel, No. 1038L, etc. 35%

Teeth, Harrow—

Steel Harrow Teeth, plain or headed, ¾-inch and larger, per 100 lb..... $2.55@$2.80

Thermometers—

Tin Case, Cabinet, Flange, Dairy, &c..... 30@35%

Ties, Bale—Steel Wire—

Single Loop..... 82½&10%
Monitor, Cross Head, &c. 70&2½%

Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

Tire Benders, Upsetters, &c.

See *Benders and Upsetters, Tire.*

Tools—Coopers'—

L. & I. J. White..... 20@20&5%

Haying—

Myers' Hay Tools..... 50%

Ice Tools—

Gifford-Wood Co..... 15%

Miniature—

Smith & Hemenway Co.'s, Davidson, ₱ doz., Nickel Plated, $1.50; Gold Plated..... $2.00

Saw—

Atkins' Cross Cut Saw Tools....35&5%
Simond's Improved..... 33⅓%
Simonds' Crescent..... 30%

Ship—

L. & I. J. White..... 25%

Transom Lifters—

See *Lifters, Transom.*

Traps—Fly—

Balloon, Globe or Acme, doz., $1.15@$1.25; gro.....$11.50@12.00
Harper, Champion or Paragon, doz., $1.25@1.40; gro. $13.00@13.50

Game—

Imitation Oneida..... 75@10%
Newhouse ..... 50&5%
Hawley & Norton..... 65&10%
Victor ..... 75@75&10%
Oneida Community Jump..... 70&5%
Stop Thief..... 60%
Tree Trap..... 60%
Hector ..... 75@75&10%

Mouse and Rat—

Mouse, Wood, Choker, doz. holes, 12¢
Mouse, Round or Square Wire, doz. 85@90¢

Marty French Rat and Mouse Traps (Genuine), ₱ doz.:

Crate lots.	Small lots.
No. 1, Rat..... $11.50	$14.50
No. 3, Rat..... $5.75	$6.50
No. 3½, Rat..... $4.70	$5.25
No. 5, Mouse..... $2.25	$3.00

Animal Trap Co.:
Out o' Sight, Mouse, ₱ doz.....$0.60
Out o' Sight, Rat, ₱ doz..... 1.20
Easy Set, Mouse, ₱ doz..... .35
Easy Set, Rat, ₱ doz..... .85
Out o' Sight Checkers, ₱ doz. holes ..... .12
Out o' Sight, Tin, 5-hole, ₱ doz. traps ..... .75

Trowels—

Disston Brick and Pointing..... 25%
Disston Plastering..... 20%
Disston "Standard Brand" and Garden Trowels..... 30%
Kohler's Steel Garden Trowels, ₱ gro., 5 in., $4.80; 6 in., $6.00
Never-Break Forged Steel Garden Trowels, in bulk, net ₱ gro. $5.50
In 1 doz. boxes..... ₱ gro. $6.00
Woodrough & McParlin, Plastering..25%

Trucks, Warehouse, &c.—

B. & L. Block Co.:
New York Pattern..... 50&10%
Western Pattern..... 60&10%
Handy Trucks..... ₱ doz. $16.00
Grocery ..... ₱ doz $15.00
McKinney Truck's..... each, net $10.00
Model Stove Trucks..... ₱ doz $18.50

Tubs, Wash—

M'f'gr's list, price per gross.

No. 0	1	2	3
Galvanized $67	$79	$89	$99

10&6?½&5&5%

Twine, Miscellaneous—

Flax Twine:
No. 9, ¼ and ½-lb. Balls..21@23¢
No. 12, ¼ and ½-lb. Balls..19@21¢
No. 18, ¼ and ½-lb. Balls..16@18¢
No. 24, ¼ and ½ -lb. Balls.. 15½@17½¢
No. 36, ¼ and ½-lb. Balls..15@17¢
Chalk Line, Cotton ½-lb. Balls ..... 24@29¢
Cotton Mops, 6, 9, 12 and 15 lb to doz..... 8½@19¢
Cotton Wrapping, 5 Balls to lb according to quality.. 13½@19¢
American 2-Ply Hemp, ¼ and ½-lb. Balls..... 12½@15¢
American 3-Ply Hemp, 1-lb. Balls ..... 13½@16¢
India 2-Ply Hemp, ¼ and ½-lb. Balls (Spring Twine)... 7½@9¢
India 3-Ply Hemp, 1-lb. Balls 7½@9¢
India 3-Ply Hemp, 1½-lb. Balls. 7@8½¢
2, 3, 4 and 5-Ply Jute, 1½-lb. Balls ..... 9@1·¢
*Mason Line, Linen, ½-lb. Bls.*17¢
No. 26¾ Mattress, ¼ and ½ lb. Balls, according to quality. 30@60¢
Wool, 3 to 6 ply....B 6¢; *A* 7½¢

Vises—

Solid Box..... 50&5%a50&10&5%

Parallel—

Athol Machine Co.:
Simpson's Adjustable..... 40%
Standard 40%
Amateur 25%
Columbian Hdw. Co., Slide ..... 40&5%; 65%
Fisher & Norris Double Screw, net, each Nos. 2, $10.50; 3, $16.00, 4, $29.50; 5, $27.00; 6, $52.00
Fulton Mach. & Vise Co.:
F. & R. Double Swivel Machinists' 40%
Star, Solid Jaw, Machinists' 40%
Hollands:
Machinists' ..... 40@40&5%
Keystone ..... 65&5@70%
Lewis Tool Co.:
Adjustable Jaw..... 30%
Monarch, 50; Solid Jaw..... 50%
Massey Vise Co.:
Clincher 40%
Parallel Bar..... 15%
Perfect, 15; Lightning Grip..... 15%
Merrill's 25%
Millers Falls Oval Slide Pattern.60&10%
Parker's:
Victor, 20@25%; Regulars....20@25%
Vulcan's ..... 40@45%
Combination Pipe..... 55@60%
Prentiss ..... 20@25%
Rock Island..... 25%
Snediker's X. L..... 33⅓%
Stephens' 33⅓%

Saw Filers

Disston's D 3 Clamp and Guide, ₱ doz., $24.00, 30%; Clamps..... 30%
Perfection Saw Clamps, ₱ doz....$1.50
Reading 60%

Wood Workers—

Fulton Mach. & Vise Co.:
F. & R. Double Swivel Coachman's 40%
Star Solid Jaw Woodworkers'....60%
Massey Vise Co.:
Lightning Grip, 15%; Perfect....15%
Wyman & Gordon's Quick Action, 6 in., $6.00; 9 in., $7.00; 14 in., $8.00.

Miscellaneous—

Fulton Machine & Vise Co., Combination Pipe..... 70%
Holland's Combination Pipe..60@60&5%
Massey's Quick Action Pipe..... 40%
Parker's Combination Pipe:
87 Series, 60%; 187 Series, 60&5%; No. 870, 40%.
Rock Island Pipe..... 25%

Wads— *Price per M.*

B. E., 11 up..... 60¢
B. E., 9 and 10..... 70¢
B. E., 8..... 80¢
B. E., 7..... 80¢
P. E., 11 up..... $1.00
P. E., 9 and 10..... 1.25
P. E., 8..... 1.50
P. E., 7..... 1.50

Dis. 15%

Ely's B. E., 11 and larger.$1.70@1.75
Ely's P. E., 12 to 20....$3.00@3.25

Ware, Hollow—

Cast Iron, Hollow—

Stove Hollow Ware:
Enameled ..... 45&10%
Ground ..... 50&5%
Plain or Unground..... 60%
Country Hollow Ware, per 100 lbs ..... $2.75@$3.00
White Enameled Ware:
Maslin Kettles..... 65&10%
Covered Wares:
Tinned and Turned..... 35&10%
Enameled ..... 45&10%

See also *Pots, Glue.*

Enameled—

Agate Nickel Steel Ware..... 33⅓%
Elan-ge ..... 60&10%
Iron Clad Wrought, Enameled..40&10%
Lava and Volcanic, Enameled..40&10%

Tea Kettles—

Galvanized Tea Kettles:

Inch	6	7	8	9
Each	45¢	50¢	65¢	65¢

Steel Hollow Ware—

Avery Stamping Co.:
Never-Break Spiders and Griddles ..... 65&10%
Steel Kettles, Maslins Scotch Bowls, Tin'd..... 60%
Steel Stew Pans, Stew Pots, etc., Porcelained 50%
Cleveland Stamping & Tool Co.:
Solid Steel Spiders and Griddles ..... 65&5%
Solid Steel Kettles..... 60&5%

Warmers, Foot—

Pike Mfg. Co., Soapstone....40@40&10%

Washboards—

No.	₱ doz.
820—Brass King, Single Surface, Open Back.....	$2.80
862—White Hen, Spiral Grimp Glass	$3.35
864—Royal Blue Enamel, Single Surface, Ventilated Back.....	$3.35
172—Our Best, Single Zinc, Soap Drainer	$3.35
722—Soap Saver, Single Zinc, Iron Top	$3.35
100—Northern Queen, Single Zinc, Perforated, Open Back.....	$3.00
134—Universal, Single Zinc, Extra Family Size, Ventilated Back...	$2.80
763—Banner Globe, Single Zinc, Ventilated Back.....	$2.25
57—Peerless, Double Zinc, Spring Protector	$3.70
56—Red Cross, Double Zinc, Swing Protector	$3.60
17—North Star, Solid Zinc, Swing Protector	$3.60
797—Jewel, Single Zinc, Pail Size.	$1.25

Washers—Leather, Axle—

Solid ..... 90@90&10%
Patent ..... 90@90&5%
Coil: ⅞ 1 1¼ 1½ inch.
9¢ 10¢ 11¢ 14¢ *per box.*

Iron or Steel—

Size half..... ⅝ ¾ 1 1¼ 1½
Washers.... $1.65 3.75 2.45 2.25 2.05

The above prices are based on $6.75 off list.

In lots less than one keg add 1½¢ per lb.; 5-lb. boxes add 1½¢ to list.

Avery Stamping Co.:
Standard, in 200 lb kegs, $6.00 ₱ 100 lb. discount; in 100 lb kegs add 10¢ net ₱ 100 lb; in 5 or 10 lb boxes, add 50¢ net ₱ 100 lb; in 1 lb boxes, add $1.00 net ₱ 100 lb.

Cast Washers—

Over ½-inch, barrel lots, per lb. 1½@1¾¢

Wedges—

Oil Finish.....lb., 2¼@2¾¢

Weights—Hitching—

Covert Mfg. Co..... 50&2%

Sash—

Per net ton, f.o.b. factory:
Eastern District.....$21.00@—
Western and Central Districts .....$20.00@$22.00

Wheels, Corundum and Emery—

Pike Mfg. Co., Corundum, 65%; Emery 75%

Well—

8-in., $2.00; 10-in., $2.30; 12-in., $3.00; 14-in., $4.45.

Wire and Wire Goods—

Bright and Annealed:
6 to 9..... 72&10&7½%
10 to 18..... 72½&10&10%
19 to 26..... 75&10&12½%
27 to 36..... 77½&12½&7½%
Galvanized:
6 to 9..... 72½&10%
10 to 14..... 72½&10&5%
15 to 16..... 72½&10&5%
17 to 18..... 72½%
19 to 26..... 70&5&12½%
27 to 36..... 65&10&10%
Coppered:
6 to 9..... 65&10&10%
10 to 14..... 70&10&5%
15 to 18..... 65&10&10%
19 to 26..... 70&5&12½%
27 to 36..... 72½&10&12½%
Tinned:
6 to 18..... 67&10&10%
Brass ..... 15½¢ *lb., base*
Copper ..... 15¼¢ *lb., base*
Cast Steel Wire..... 50%

Spooled Wire—

Annealed and Tinned..... 75%
Brass and Copper..... 70%
Retailers' Assortments, per box, $2.00@$2.25

Wire Clothes Line, See Lines.
Wire Picture Cord, see Cord.

Bright Wire Goods—

Steel Wire Goods..... 90&10%
Brass Wire Goods..... 90&10%
Brass Cup and Shoulder Hooks, 85&10%

Wire Cloth and Netting—

Galvanized Poultry Netting, 80&2½@180&7½%
Painted Screen Cloth, 100 ft., $1.35
Standard Galv. Hardware Grade: 100 ft. rolls, 2½ to 48 in. wide, Per 100 sq. ft.
Nos. 2, 2½ and 3 Mesh.... $2.75
Nos. 4 and 5 Mesh..... $3.00
No. 6 Mesh..... $3.25
Nos. 7 and 8 Mesh..... $3.75

Wire, Barb—See *Trade Report*

Wrenches—

Agricultural, 80&10&5@80&10&10%
Alligator or Crocodile..70&10@75%
Baxter Pattern S Wrenches, 70&5@70&10%
Drop Forged S..... 45@45&5%
Acme ..... 60&10%
Alligator Pattern, 70%; Bull Dog..70%
Bemis & Call's:
Adjustable S, 40&5%; Adjustable S Pipe, 40&5%; Briggs Pattern, 40%; Combination Bright, 50%.
Steel Handle Nut..... 50&5%
Combination Black..... 50&5%
Merrick Pattern..... 50&5%
Boardman's 40%
Coes' Genuine Knife Hdl...40&10&5&5%
Coes' Genuine Steel Hdl...40&10&5&5%
Coes' Genuine Key Model..40&10&5&5%
Coes' Genuine Hammer Handle..... 40&10&5&5%
Coes' "Mechanics'"....40&10&10&5&5%
Donohue's Engineer..... 40&10%
Eagle 70%
Gem Pocket..... 50%
Hercules 70%
W. & B. Machinist:
Case lots..... 50&10%
Less than case lots..... 50%
W. & B. Railroad Special:
Case lots..... 50%
Less than case lots..... 40&10&5%
Solid Handles, P., S. & W...50&10%; full cases..... 50&10&5%
Standard Nipple Mfg. Co.:
Duplex Chain..... 50%
Uwanta Wrench Co.:
Uwanta Special, Iron Handle..... 40&10&5%
Other Wrenches..... 50%
Vulcan and Agrippa Chain..... 50%
Whitaker Machinists'..... 50&10%

Fruit Jar—

Benj. P. Forbes, Triumph, ₱ gro., $7.50; per doz..... $0.90

Wrought Goods—

Staples, Hooks, &c., list March 17, '02..... 90@—%

Zinc— *(Cask lots at mill.)*

Sheet.....per 100 lb., $7.00